

The Iron Age

A Review of the Hardware, Iron and Metal Trades.

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The Martel Furnace.

The Martel furnace at Pt. St. Ignace, Mich., is now being constructed by Messrs. Davenport, Fairbairn & Co., of Erie, Pa. As it makes a new departure in charcoal furnace practice in this country, we present the accompanying illustrations, showing the details of the plant, and for which we are indebted to Messrs. Witherow & Gordon, of Pittsburgh, the contractor. As will be noticed, it is the first charcoal furnace in the United States represented with the Whitwell hot-blast stoves, and its lines and zones have been so proportioned as to meet the conditions incident to the use of higher temperatures. The subject of the considerations affecting this change is one of much interest, and we shall at an early date give some of the ideas which led to the adoption of the lines of this furnace, as embodied in a paper written by Mr. J. P. Witherow for presentation at the recent meeting of the Institute of Mining Engineers. The Martel furnace has a diameter of bosh of 10 feet 6 inches, and a height of 53 feet from the hearth level to the platform top. The hearth is 6 feet 6 inches in diameter and 6 feet high, is angled to the bosh 16 feet 4 inches high. The diameter of the bell is 4 feet 9 inches, and that of the tunnel head 7 feet 3 inches, while the height of the tuyeres is 4 feet 6 inches. The angle of bosh is 73 degrees. In order to preserve

furnace was commenced last November, and work was continued thereon until the middle of January. It will be finished and in blast in July. The charcoal will come off the company's own property, and the ores from Marquette by the new railroad connecting these two points. The interesting question presented by the design of this furnace is, will she come up to the expectations and requirements of the engineers, Messrs. Witherow & Gordon, of Pittsburgh, which are that the output will average from 65 to 70 tons of iron per day on a charcoal consumption of 75 bushels to the ton of iron?

Small Arms and Artillery.

As remarked lately by one of the local representatives of a large manufacturer of firearms, "this business of supplying the governments of the world with small arms is practically in the hands of German Jews, who have their headquarters in Berlin and Hamburg; hence, Americans have a poor chance at present." These parties, it is explained, are buying up the obsolete and discarded weapons of various governments—arms used in the Franco-German war, for example—and, after putting them in order, are sending them to China, South America and elsewhere. Aside from the supplies thus

and are now filling an order for 20,000 Remington guns for the Argentine Republic, and another order is being executed for 15,000 Hotchkiss guns for the government of Chili; but in both of these countries they are making their own cartridges—the former using machinery made by the Remingtons. It is remarked that for all the most celebrated American arms the prices asked indicate a great decline from former values. The Martini-Henry now sells at \$17.50 with bayonet, the Berdan at \$21 and the Remington

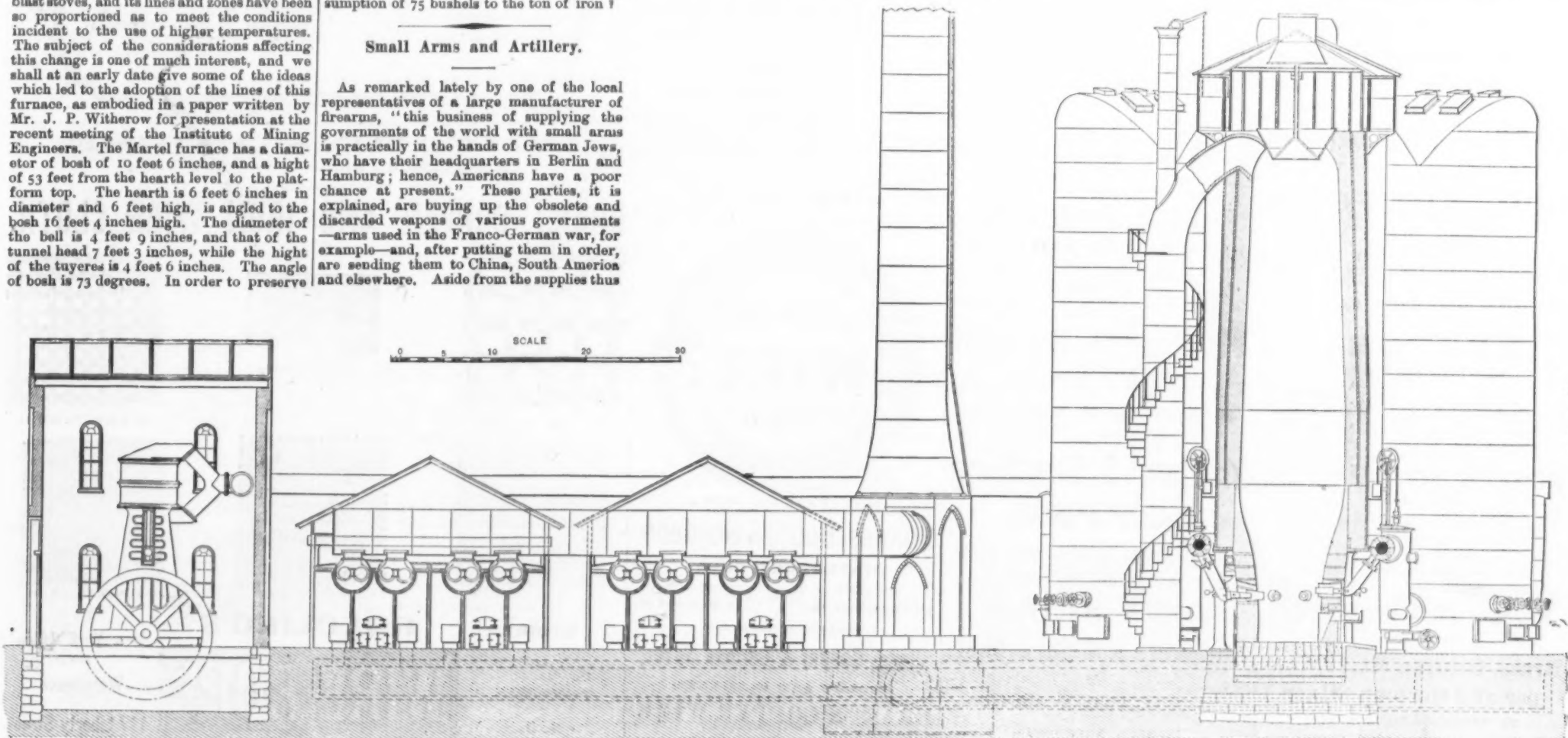
recommended, and call them "Gorloff guns," out of compliment to that officer. It is probable the American manufacturers are seldom heard of, although at the present time they are putting these batteries in every division of the Russian army.

It is remarked, perhaps by parties not wholly disinterested, that a revolution has come about in this business; that the magazine gun is becoming the gun of modern times, and that experiments point to the Lee gun as the arm of the future. A few

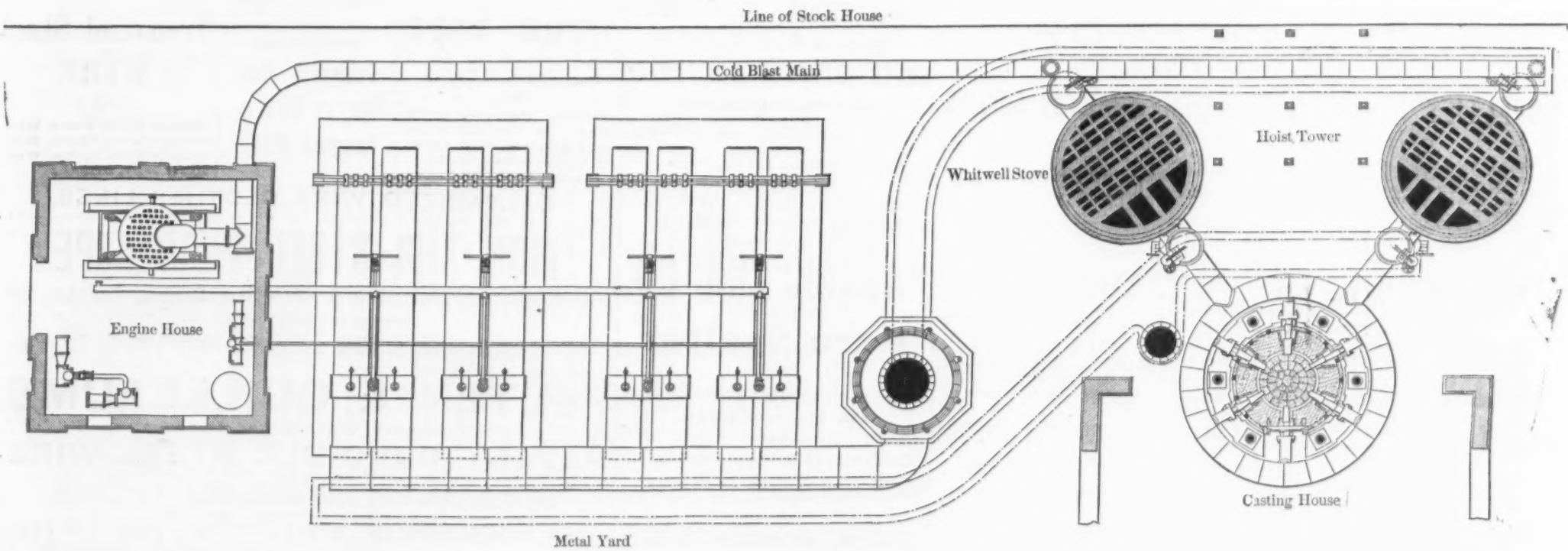
pliment to this country that the English government has at last settled down to using the composition invented by Col. Crispin, U. S. A., as superior to any other.

In addition to the above, it may be mentioned that 10,000 or 15,000 stand of arms have been ordered for Guatemala and San Salvador.

On the morning of the 15th inst. a barrel of coal oil exploded in the engine house of the East Pennsylvania Iron Company's fur-



ELEVATION OF THE MARTEL CHARCOAL FURNACE.



PLAN OF THE MARTEL CHARCOAL FURNACE.

the lines of the furnace, three continuous rings of water cooling plates are built in the bosh, and the bottom is protected by a sand cooler water-back. The furnace is supported by two Whitwell stoves of recent design, 15 feet in diameter and 60 feet high, each stove having a heating surface of 14,000 square feet.

It has also a steam hoist manufactured by Crane Bros., with wrought-iron superstructure, roofed and combining with the roof over platform and bridge. The draft stack is 5 feet in diameter and 150 feet high. It takes the draft of stoves and boilers. There are four boilers, 46 inches in diameter and 34 feet long, with two flues, each 16 inches in diameter. The engine house is a brick building, roofed with an iron water tank, which supplies the furnace and stove connections. The vertical blowing engine has a 72-inch cylinder, and 45-inch stroke. This

furnished, a large contract with Prussia, comprising 100,000 of the Smith & Wesson cavalry pistol, is being filled by parties in Berlin who are using American machinery, and from a specimen which we have examined it would appear that there is no variation from the original pattern, aside from the omission of the American stamp. This pistol is furnished at the low price of \$10, "but it is robbery," said our informant. It may be remembered that the Russian government a few years ago ordered 60,000 of these arms from the Smith & Wesson Company, paying \$13 each. The last of the lot was delivered in 1878. A Berlin firm, by the aid of gun-making machinery from the Pratt & Whitney Company, of Hartford, are now supplying that market, as we have seen, having underbid American contractors.

Our manufacturers have recently received

at \$15, and each of these is said to cost less than \$8 to manufacture. The figures given show a reduction of from 33 to 40 per cent., compared with prices a few years ago; and the same reduction applies to cartridges, because the machinery in use has been paid for from contracts executed heretofore. The Berlin manufacturers, it is said, consider it a great triumph to have stolen a march on their American rivals, who perhaps expected to keep the whole field for themselves.

Of field pieces, the Hotchkiss batteries, carrying from an eight to twelve-pound shell, are pronounced a great success. The French have been experimenting with them for three or four years with good results, and the Russians have adopted them for their service. As we have stated heretofore in these columns, the Russians ordered 600 Gatlings from the United States, through Gen. Gorloff, by whom they were

thousand of these have been ordered by the United States government at Springfield, for distribution to the troops in actual service. After one year they will be brought together for official inspection and for a decision. England is also making experiments with this arm at Wimbledon, with favorable reports. It is made at Sharp's.

It is predicted that for batteries—that is, forts and harbor defense—no breech-loading gun will prevail as against the muzzle-loader; but for naval service, where the cannon must be drawn in to reach the muzzle, breech-loaders to a certain extent will be used where a very large caliber is necessary, as the balls cannot be handled without machinery.

The metal from which large cannon are cast is a composition, and European governments have expended large amounts in testing its tenacity and resistance. It is a com-

nance, operated by Theodore Garretson, at Pottsville. The furnace is located at Lyons, Berks County. The night founder discovered dense volumes of smoke issuing from the engine house about half past one o'clock in the morning. An attempt was at once made to connect the hose with the water plug. The smoke was so dense and suffocating that the attempt was abandoned. All means of reaching the water were, therefore, cut off, and the building was left to its fate. Not long after the fire was discovered the building was a smoking ruin. Nothing but the brick walls remained of it. Two stationary engines were badly damaged. Considerable other machinery was also damaged. The engine house was a brick structure about 50 feet square. The loss is estimated at between \$15,000 and \$20,000. The furnace will undoubtedly chill, and, consequently, be blown out.

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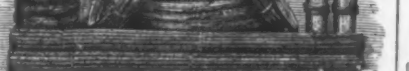
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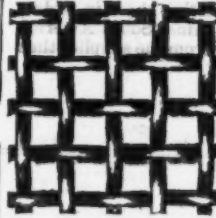
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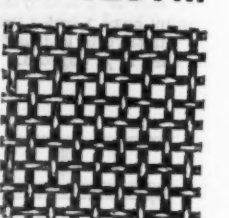
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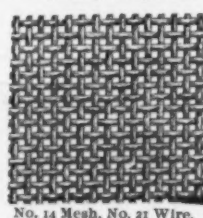
No. 4 Mesh, No. 14 Wire.



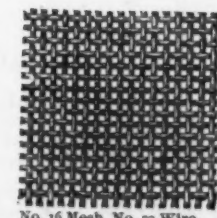
Wire Cloth, partly unrolled.



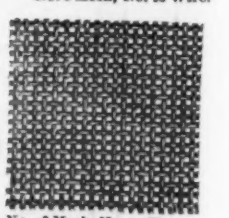
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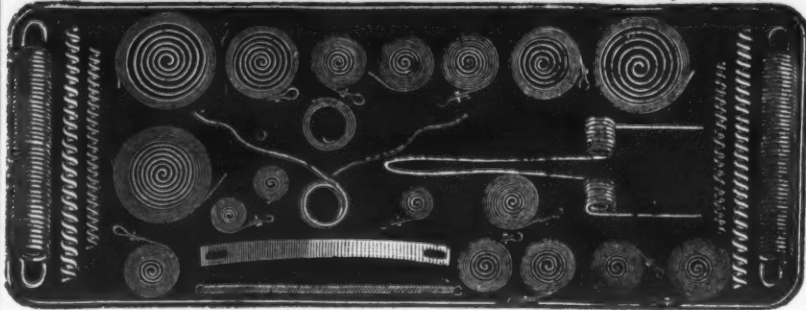
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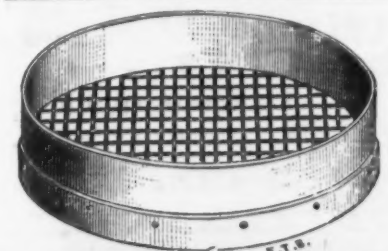
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THE NATIONAL ASSOCIATION OF STOVE MANUFACTURERS.

Proceedings of the Second Day's Session.

The association was called to order on the morning of February 10th at 10.30, by the president, Mr. R. P. Myers.

After some routine business the Chair then called for the report of the Committee on the President's Address and other business, and Mr. John S. Perry, chairman, offered the following:

MR. PRESIDENT AND GENTLEMEN: The committee appointed to consider the several points suggested in the address of our late President, General Rathbone, and to report thereupon, and also to present other subjects, if found necessary, for the consideration of this meeting, respectfully report that among the many subjects so ably treated in the address, none appear to your committee of such paramount importance as the probable cost of iron during the present year, and the prices for which our products shall be sold.

In respect to the probable cost of iron, your committee can only form their conclusions upon the history of the past. From a careful study of that, they find that during the last twenty years, the average price for good No. 1 foundry iron has been much nearer \$30 than \$25, which may be assumed as the present minimum price. That the occasions on which iron has ruled materially below \$25 were unusual and exceptional; as for example, at the breaking out of the war in 1861, and during the depressed years of the panic, two conditions which are not likely to be repeated at present.

Your committee have satisfactory evidence that under ordinary circumstances, with the present price of material and labor, there is little or no profit to the manufacturers in the sale of No. 1 foundry iron at \$25.

A reference to any publication devoted to the interest of manufacturing, as, for example, the *Boston Journal of Commerce*, will show that unusual activity prevails in every branch and in every part of the country, and that the consumption of iron in 1881 will largely exceed that of any year in the past. This point your committee thinks requires no argument.

When iron advanced from \$20 to \$30 or \$40 a year ago, the producers generally held large stocks, some of which have been carried for several years.

Your committee have reason to believe that comparatively light stocks are now held in the hands of both makers and consumers. It must be remembered, however, that by the increase in the number of furnaces in blast, and the improvements made in the construction of many of them, the production of American iron is much larger than at any former period.

Your committee must refer to the important element of foreign iron, which enters into this question. This is substantially an unknown quantity, but we do know that the capacity for production in Great Britain is immense. Your committee understand that this problem, so far as relates to us, will only be solved by the foreign demand. It is well, perhaps, to remember that iron cannot be made in Great Britain, transported to this country, and put upon the market and sold with profit at a very low price. At 63¢, which may be considered an average price, we have the first cost at about \$15.75. The duty of \$7 brings the cost to \$22.75. To this must be added freight, insurance, commissions and the thousand expenses attendant upon the movement of such heavy material, leaving, so far as your committee can discern, no margin for profit, at even \$26.

There are men whose judgment is entitled to confidence, who believe that iron will reach \$30 or more. Your committee believe that the elements which enter into this question are more favorable to such a result than those which existed a year ago. They, therefore, recommend that the prices of stoves be based upon the probability of a strong iron market, with a tendency upward.

Your committee feel warranted by the census just completed in stating that we have in this country over 10,000,000 of families, and that every succeeding year in the next decade will add to this number not less than 75,000 more families. This statement may give some idea of the prospective demand for manufactured goods.

It is generally believed that the stocks of stoves in the hands of both manufacturers and dealers is smaller than usual, and that the demand during the coming season will be sufficient to absorb the product at paying prices.

It cannot be doubted that vast numbers of stoves were sold during the past year at prices below the cost of production, and it is believed by your committee that considerable disappointment has resulted from an inspection of the yearly balance sheets.

The association, at the meeting a year ago, recommended that upon the basis of iron at \$35 the price for common stoves should be fixed at 6½ cents per pound, and from that to 9 cents, according to the quality. As iron now ranges at about \$10 below the price assumed at that time, your committee now recommend that the minimum price for common stoves until the summer meeting of the association be fixed at 6 cents, mounting and ornaments to be added thereto, and from that to 8 cents, according to the quality.

They also recommend that the price for repairs be continued at 8 cents—this latter, in view of the great cost of making repairs that are not current, and of attending to this troublesome department of the business. They also recommend that the discount upon hollow-ware shall not exceed 50 per cent. Also that the term for credit shall not exceed four months, the same to be settled by note.

As these prices are named in the full consideration of the increased cost for labor over that which existed a year ago, and the probable advance in the cost of iron at no distant day, your committee feel confident that an advance in our prices will be found necessary at the time of our meeting in June.

They cannot close their report without

stating their firm conviction that, with crops of reasonable abundance and a fair market for the surplus, and in the absence of any great calamity to our country, we are destined to enjoy one of the most prosperous years that this generation has experienced.

JOHN S. PERRY,
M. I. MILLS,
F. B. FILLEY,
JOSIAH JEWETT.

The report of the committee was received and the consideration of its recommendations declared in order. The first recommendation, as to prices, &c., being based on what the committee considered the probable course of the iron market, a member called attention to the presence of Mr. A. G. Gorham, of Stevenson, Peirson & Co., and the Chair invited him to give his views.

Austin G. Gorham: Mr. President and Gentlemen—I should be very glad to say anything I can if I thought it would be of interest. I think Mr. Perry has covered the whole ground in his report, though his views are more conservative than my own. I take much stronger ground than he does. He speaks of the average price of iron being \$30 for the last 20 years. I have been back to 1868 very carefully, and to 1844 still more so. Since that period the reports are much more definite. The record shows the average price of No. 1 pig iron to be close to \$35—that is, from 1844 to 1881. A year ago the advance was caused by prospective prosperity; now it will be legitimate prosperity. A year ago everybody rushed in on one top of the other, supposing we would be short of ores, and they climbed one above the other, until they put the iron away up, and many consumers went in as speculators. When this thing turned—the foreign importation being large, over 400,000 tons being shipped the first three months of last year—no one wanted to buy. When it started on the down scale they got frightened and would buy nothing. There were three 500-ton lots of iron—500 tons of crane, 500 tons of No. 1 extra Thomas, and 500 tons of No. 1 extra Allentown—offered gradually down to \$40. That was in February and March last. No one felt at all uneasy until No. 1 extra iron was offered at \$40, and then it was offered down to \$39.50, and then broke to \$25.50 before there was a purchaser. There were some lots offered upon the market. The first purchase was made by agents.

I have during the last four weeks been out of town most of the time calling upon people I know intimately, who would give me absolute facts, in order to see how the prospects were for 1881, in different branches of the iron business, among the consumers. I went to some of the car works. At the Springfield works I found, during the last 60 days, that they had absolute orders for two years ahead, working day and night. They had taken all the orders for the next six or eight months, and so had to refuse all orders beyond that time. Another man in New York, who takes orders for cars, had orders with him for over 5000 freight cars and could not find any place to put them. The locomotive shops, too, are full of orders for six and eight months ahead. Very few of them have the iron bought to fill these orders, and I find it the same with machinery and steam-engine manufacturers. Our salesmen last week stated that most people have only 30 or 60 days' supply of pig iron. Some of the more wealthy manufacturers have their stocks and have bought ahead. Eighteen dollars for pig iron two years ago showed a better profit to the pig-iron producer than \$25 to-day. We are running a furnace of our own East, where we went into blast a year ago last September. In August, when we made our arrangements for buying our coal and other material, we estimated that it would cost us a little less than \$17 to make that pig iron. Every week we have a sheet showing the cost of production of each week. The last week of January it was \$24.09 a ton. The cost of labor two or three years ago was very much less. We then got labor at 80 cents, and some at 60 cents, where we were mining ores and doing ordinary work at the mines, and to-day we are paying \$1.25, and are likely to pay more. Some of our neighbors have sent to Castle Garden to secure emigrants as they arrive, but they are all booked through to the far West. We are short of labor. We cannot get it.

There is no doubt that there will be an advance in pig iron. There is no doubt that we shall see \$30, taking a conservative view. All advance beyond that hinges upon the foreign market. From whatever cause there is an advance there, we shall see a proportionate advance here; and if high prices there, possibly higher prices here than we saw last January. But that is all based upon the foreign consumption. Every year they are increasing the consumption very much indeed, and I am glad to see that many of the outside roads—railroads outside of the United States—are increasing and enlarging and new roads are being built. The increase in this country this year will be 2000 or 3000 miles more of railroad than in 1880. I see by the papers that the Grand Trunk Railroad placed a loan abroad to build a second track throughout. That must be foreign rails. That is what I want to see. Then, too, there is an item which few take into consideration—the increased production of steel rails in this country. In 1872 and 1873 pig iron sold at about \$60; Scotch, about \$65 to \$68. I remember selling some Coltness at \$68 in Boston. That was in February, 1873. At that time we consumed all the product of this country and a little over 1,000,000 tons foreign manufactured and pig iron—about 500,000 tons of each. There have been very few furnaces built since the panic of 1873. In the West, where they use Lake Superior ores and coke, they have increased in production, but they have not increased as we have increased in consumption. In 1872 and 1873 there were between 200,000 and 300,000 tons of steel rails made in this country. In 1881 it will be between 1,200,000 and 1,300,000 tons. Even the product of iron rails has increased somewhat, but not very much. So that an increase of 1,000,000 tons of steel rails must be made of pig iron, and the pig iron made either in new furnaces or in old furnaces that in 1872 and 1873 made mill or foundry iron. The two Colorado furnaces were making ordinary

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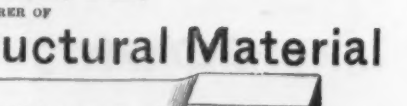
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pletely finished and ready for cold shoeing: have

clip and solid steel calk. The holes are punched

through at the proper angles and free from burrs.

Same number of Shoes per keg as in kegs of un-

finished shoes.

I find in Troy and Albany (and probably

the same elsewhere—I have seen it in Penn-

sylvania, too) that during the years of de-

pression most laborers and mechanics ran

into debt. Two years ago they owed their

grocers and butchers and all from whom

they purchased the necessities of life. Last

year they have been well paid, and they

have liquidated their debts, or partially

so. This coming year, with high wages,

they are going to invest that money else-

where; they are going to buy luxuries.

The production of sewing machines before

mentioned illustrates this. And they are

going to buy stoves too. I think the demand

for stoves this year will be something enor-

mous all through the country, East and

West. I have seen it demonstrated very

thoroughly. In New York I know the

farmers all look for a large crop this

coming year, and hope there will be a cor-

respondingly short crop abroad, so that they

will have a market for it. That is all very

well, but that will be the third year. I am

inclined to think it is better to have a good

crop both here and abroad. With a popula-

tion of 50,000,000 here—the estimate, I think,

is a barrel of flour to each person—if we

can buy that flour at \$2 a barrel cheaper,

and have \$100,000,000 more to circulate in

the country with which to buy other goods,

it will do more good than to have a large

crop here and a scant crop on the other side

of the water.

I have cited these few instances simply to

show the condition of the iron business in

this country and abroad, and I would here

add that the estimated consumption of iron

in this country for 1881 is 1,500,000 tons

over the amount consumed in 1873. I

thank you for your kind attention to these

desultory remarks, and regret to have

occupied so much of your time. In conclu-

sion, allow me to wish you a successful and

profitable year.

The President: Very glad indeed to hear

from you, sir.

Gen. Rathbone read the following extracts

from a letter from Thomas J. Pope & Bro.

touching the outlook for the iron market:

"January 31, 1881.

"Relative to the prices of pig iron for the

ensuing portion of the year 1881, our opinion

is that they will advance, provided no un-

foreseen political disaster occurs in Europe.

All accounts from Europe indicate a large

revival of business there; and a tendency

to strong speculative action in most all

the branches of finance, industry and com-

merce. This tendency is kept back, how-

ever, for the time being, awaiting the issue of

political events now transpiring in Ireland,

in Africa, and on the Continent of Europe.

The difficulties in Ireland are more serious

than are generally apprehended; those in

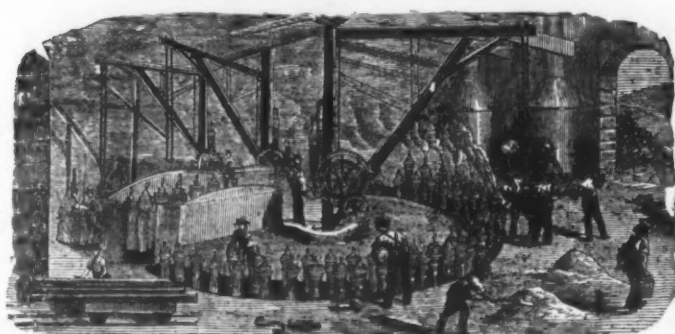
Africa with the Boers will speedily be ended;

foundry iron for stove plates and machinery in 1872 and 1873, and in the last two years they have been making Bessemer pig for this very object. There are now seven furnaces leased and run by the Bethlehem Iron and Steel Company. Those came in competition with us in 1872 and 1873, making mill and foundry iron, and they are now making Bessemer. All the sheet mills of the country have bought or are buying Bessemer pig iron abroad, and that will stimulate the foreign market. The demand has increased abroad from 1872 for iron and rails for India, Australia and elsewhere nearly fourfold.

Another feature has been spoken of in the papers, and by consumers supposed to be the fact—that is, the amount of iron in New York, Brooklyn, Baltimore and Boston, which has been vastly exaggerated. Out of 50,000 or 60,000 tons of pig iron claimed to be in New York and Brooklyn, we know there are not 8000 tons of Scotch pig; there is a

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SAW PLATES

For Circular, Mulay, Mill, Gang, Drag, Pit and Cross-Cut Saws.

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For Springs, Billet Web and Hand Saws, Shovels, Cotton Gin Saws, Stamping Cold, &c., &c.

SIEMENS-MARTIN (Open-Hearth) PLATE STEEL

For Boilers, Fire-Boxes, Smoke Stacks, Tanks, &c.

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For Shafts, Spindles, Rollers, &c., &c.

File, Fork, Hoe, Rake, R. R. Frog, Toe-Calk, Sleigh-Shoe and Tire Steel, &c.; Cast and German Spring and Flaw Steel.

"Iron Center" Cast Flaw Steel. Finished Rolling Flaw Couplers with Patent Screw Hubs attached.
"Soft Steel Center" Cast Flaw Steel. Agricultural Steel cut to any pattern desired.
"Solid Soft Center" Cast Flaw Steel. Steel Forgings made to order.

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Send for prices for any work in this line.

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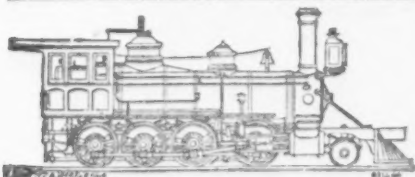
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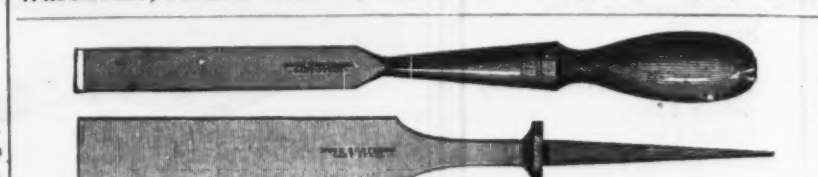
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turers. Send a small order and give it a trial.

Made in any length or thickness and about one yard wide.

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but the position of complications between Turkey and Greece are considered by European authorities to be full of danger unless speedily settled. These are only clouds on the atmosphere of European politics and trade; and excellent judges of European affairs admit the possibilities of war to result from these causes as remote, although until matters are settled the public mind is more or less agitated by them.

"The stocks of iron in Glasgow amount to about 700,000 tons—some authorities say only 500,000 tons—but these stocks are not shipping brands, but simply mixed numbers, which circulate in the speculative world of Europe. The shipping brands, or really good No. 1 extra irons, in Glasgow are short in stock and also short in the furnace banks. The Middlesborough pig irons—which, you know, are more abundant—are neglected, as compared with the Scotch irons, because of the alleged inferiority of their quality, which results from their cold shortness, or the large quantity of phosphorus which they contain. They are, however, used in England and Scotland for mixture with Scotch irons, where not much strength and softness are required, to cheapen the castings, and they serve to aid in supplying the market with iron, and must necessarily affect, in a measure, the price of even good brands of pig iron in Europe. The universal opinion in England is that there must be a large demand set in from the United States. The furnaces are running generally full, and the iron masters, as well as the English public, are confident of the future. It is true that a large number of them base their ideas upon the demand that must come from this country. We think there will be a fair demand, but nothing like that which characterized the business of last year, and that the support of the English iron market must and will come from the European and Eastern trade.

"It is well known that a variety of railway projects are under consideration, and if circumstances favor finance and peace in Europe during next spring they will be started. Railways in the East Indies, in Japan, in China and Australia, will create the absorbing demand for English rails and English pig iron, and other English productions, for a number of years to come, and, as the London Times and other influential journals have expressed it, a tide is now setting in of prosperity and activity in trade, which is likely soon to lead to large speculative operations.

"We never knew the absorption of raw material so great as at present in the United States, and from all sources of information we believe that this absorption will continue for some years to come, particularly if next fall the crops be of a fair average character. The wonder to us has been that, with the abundance of money and this greatness of demand for raw materials, prices have been kept so low as they have been for the last few months, but we suppose the fearful lessons taught by the boom of last year have made men timid and prevented the rise which otherwise would have occurred in November and December.

"One element favorable to higher prices in the United States for foundry and forge irons, lies in the fact of the high costs of freights from Europe to this country. These are induced by the vast quantities of Bessemer rails, Bessemer pig iron, Bessemer ingots under contract for the United States, and the amount of freight room called for by this class of material is likely to increase as the year advances. Consequently, it may be said that the high rate of freight adds at least from \$1 to \$2 a ton to the cost of laying down foreign pig iron in the United States.

"On the furnace banks in November there were, as taken by ourselves on the Lehigh and in New Jersey, 126,000 tons, the bulk of which consisted of gray forge pig iron and considerable quantities of No. 2 extra. These stocks, we do not think, have since increased, as the advance in the price of old rails here rendered marketable the gray forge irons produced in that section of the country for consumption by the mills in the interior of Pennsylvania. The stocks of old rails, &c., in New York and three other seaboard cities we give to you with this.

"Generally, therefore, the outlook for business is exceedingly good, and an advance in prices is looked for, this advance being based largely upon the healthy condition of European markets, and the stimulated demand of the Eastern hemisphere for irons advancing the price of irons in Europe."

Mr. G. H. Barbour: I was very much interested in Mr. Gorman's remarks. We have with us to-day Mr. Olhaber, of Cincinnati, and Mr. Warren, of the firm of Mathew, Ady & Co., of Cincinnati, and perhaps we can hear from them.

Mr. Clement Olhaber: I prefer hearing from Mr. Warren, and then perhaps I may give my views and somewhat the views of our house, as well as what observations I have made since I have been in business. However, I will now in a general way state that, in a large measure, I confirm what the gentleman from New York has said. In fact, I have made some statements similar to his, and have been laughed at for them.

The President: We would like to hear from Mr. Warren.

Mr. Warren: I am totally unprepared, Mr. President, to give you anything of interest, especially to these older gentlemen. We represent a very large number of furnaces, and we expect that the most of the iron will be in demand. Our furnaces have increased their production to a great extent, and the general views of our furnacemen are that the prices are about satisfactory to them; that there will not be much of an advance—not to exceed \$3 or \$4 a ton. I think I could please most of the buyers here in quantity.

Mr. C. Olhaber: Before what is said in regard to furnaces being willing to sell ahead is forgotten, let me say one word. We have withdrawn all options. I have been in pig iron directly but a very little while, but to-day I would not sell at an option. In other words, I would not send a man a sample case with the privilege of 1000 tons. No, we wouldn't even do that. They say that the cost of material would be satisfactory enough if they paid for labor no more than three years ago, but they are paying more now. Where they were paying 60 cents they

are now paying \$1.25. They are paying more for everything. One thing gentlemen must bear in mind—that no one branch of industry will work for low wages when all others are receiving higher wages. You notice that bricklayers, tailors and carpenters are striking for advanced wages, and of course it is natural that molders should desire to follow. Self-preservation compels them to ask for more wages, and, therefore, iron, in our opinion is cheaper than it will be. We would like, of course, to sell. I just mention that here for the benefit of any of you. (Laughter). We do not feel disposed to push our iron in the market just at the present time. We may be mistaken, but I do not think we have been very much out of the way the last two years.

The President: If there are no further remarks to be made upon the subject, we will pass to the next item of the report.

Mr. Perry read the committee's recommendation as to prices.

The President: You have heard the recommendation of the committee. Is there any resolution to be offered upon the subject in regard to the prices, or will you discuss it without resolution?

Mr. Warren: I move that it is the sense of this convention that the recommendation of the committee is approved.

Mr. Grange Sard, Jr.: I have been waiting, Mr. President, hoping that some one else would say something upon the subject, and I now promise to say but a few words. There are many here from whom we rarely, if ever, hear, and we would like very much to listen to them. I wish to say, as one who has occupied more time than I really desired to, that I have done so rather than have the time go to waste, and have frequently spoken because no one else seemed willing to venture any remarks. I am in favor of very conservative action in regard to prices, and hold rather conservative views in regard to the prices of pig iron. I am not, in any sense, a "boomer." I have no stock in the pig-iron trade, but I am interested in the products of this country being sold at a fair, reasonable price. It is for the interest of us all that pig iron should pay a profit to those who manufacture it.

It is not to the interest of manufacturers of pig iron that it should go beyond a reasonable figure, and I think it is contrary to the interest of stove manufacturers that pig iron should take an unnaturally high value for even a short time. It seems to me that the key to the situation in the iron business is the recollection of the fact that England and Scotland are within telegraphic communication with this country, and that it takes but about two weeks to get into this market the stocks that have accumulated to the amount of thousands of tons; and, therefore, when we make any calculations in this country which do not take into account the fact that there is iron in Glasgow as well as in New York and Philadelphia, such calculations are liable to miscarry. We have also demonstrated the fact that a certain quantity of Middlesborough iron can be used to advantage. I do not think it is wise for us to calculate on high iron. When I say "high iron," I mean iron above \$30 a ton. It is a very unsafe thing for any man to prophesy, as I believe Dr. Holmes says, unless he knows! I will not risk my reputation by making any prophecies as to the value of iron in the future, but I will simply say that, as a business man, and as a member of a firm engaged in the stove manufacturing business, I feel that it is very safe for us to buy iron at the prices at which it has been sold recently. I can also say that we pretty well concede that, so far as pig iron is concerned, if it goes up it is so much to our advantage, unless it goes too high. The price of stoves was recommended at 6½ cents last winter, when iron was about \$30 a ton, but it was expressly stated at that time that the price of stoves as then recommended was based upon iron at \$35 a ton. If I am mistaken I trust some one will correct me.

The President: I think that is correct.

Mr. Sard continued: At that time there were those who urged that the price should be fixed at a higher rate, but wiser counsels prevailed. The recommendation of the committee now is that the price of the commonest stoves shall be 6 cents a pound, or that that shall be the minimum price, with an additional price for everything besides the castings. I suppose that, when they speak of the commonest goods, they mean a class that very many of us would not be willing to admit we made, though I think nearly all of us are manufacturers of first-class goods; but the probability is, when it comes to making our prices, we shall not think so well of our goods as we ought. At 6 cents a pound for stoves I think there was more profit to be made last spring, at \$30 dollars for iron and selling the stove for 6½ cents, than there will be to make them this spring with iron at \$25 and sell for 6 cents a pound, because there are so many important elements of cost outside of the pig iron, and the greater prosperity of the times leads to a little more prodigality in expenditures. We find that the cost, not only of making but of selling the goods, has been increased. Those who work for us on a salary have a right to expect that they shall receive more than they received during the times when business was depressed, and I think it is a great deal of satisfaction to manufacturers of stoves to feel that they are able to grant the reasonable request of their employees in that direction. I think that the recommendation of the committee is a very modest and conservative one, and I am sure that no one would wish to go lower than that in prices. I think there are some who would consider the price as made too low. Nevertheless, as I said before, I am in favor of conservative, careful recommendations, and I very cordially approve the recommendations of the committee.

Mr. H. Baldwin: If an amendment to these recommendations be in order, I would suggest one something to this effect, though it refers to some other points than those immediately under consideration—that the practice of employing traveling salesmen be discontinued; that credits be limited to 30 days, and establishing prices on a permanent basis from which no variation shall be made, and a reduction in those prices, as recommended, of 15 per cent.

Mr. Grange Sard, Jr.: I move that that

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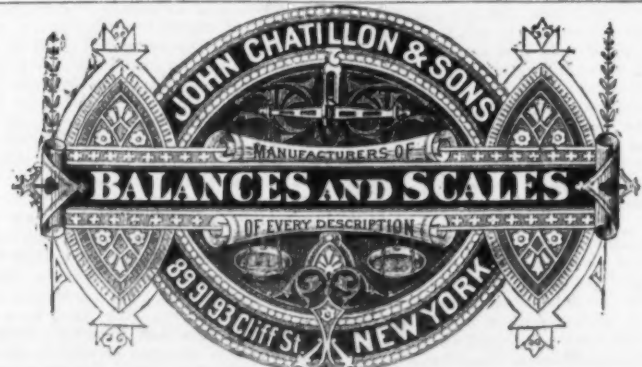
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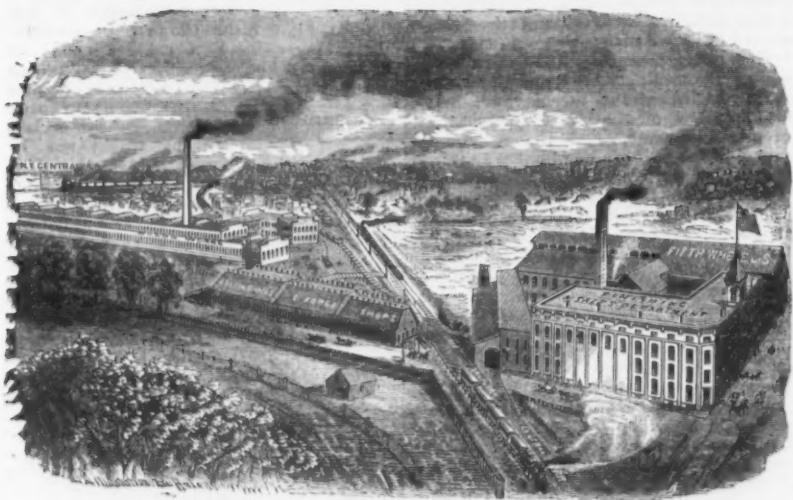
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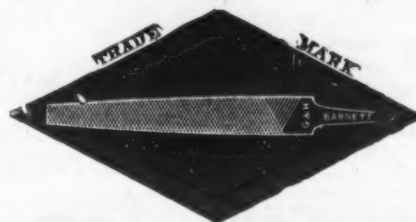
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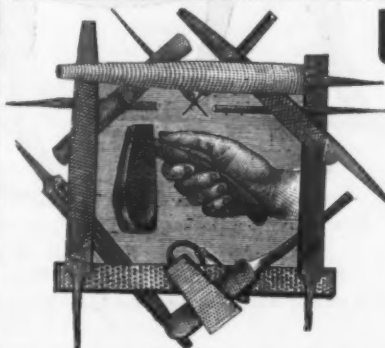
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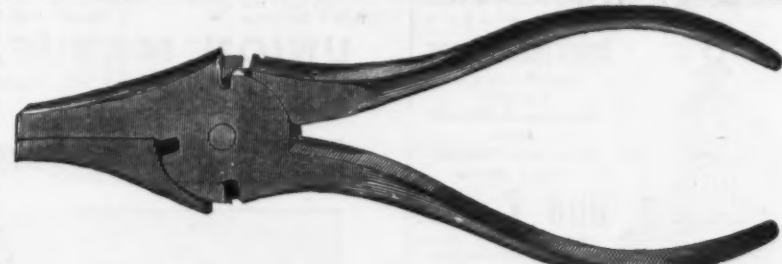
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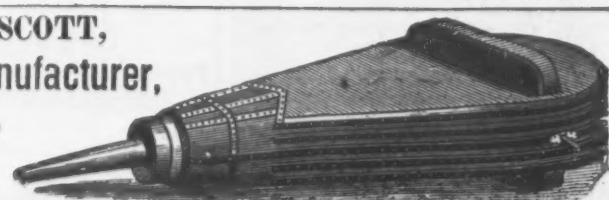
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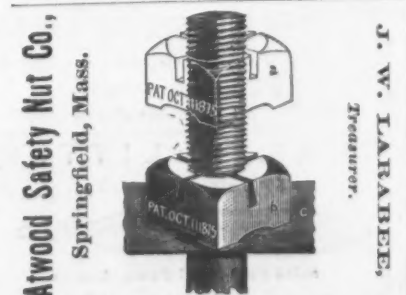
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amendment be laid upon the table. It seems to me that we must allow a little latitude for individual members to conduct their business in their own peculiar way. I have no doubt Mr. Baldwin thinks very highly of the way suggested in his amendment. It seems to me this brings into the subject under discussion new matter, and if it is desirable to consider that by itself, why, very well, but I think it would be better to confine ourselves more strictly to the subject of the recommendation of the committee; therefore, I move that the amendment be laid upon the table.

Mr. Henry Baldwin: I understand that there is no attempt to bind any person here. I made it simply as an amendment to the recommendation. Perhaps it is out of order.

The President: There is considerable of the amendment proposed that is really foreign to the matter of fixing of the prices suggested, and which is now under consideration. It might be well for Mr. Baldwin to have considered separately those parts which do not pertain to the subject now before us. Is Mr. Sard's motion seconded?

The motion being seconded, Mr. Baldwin withdrew his motion.

The President: The amendment being withdrawn, are you ready for the question?

Gen. Rathbone: I hoped we should have a more general expression of opinion upon this matter. At the meeting at Niagara (which meeting, I believe, resulted in very great good to the craft) the members will remember that, as presiding officer of that meeting, I called upon the firms there represented for an expression of opinion, and, if the president will permit the suggestion, I trust he will call upon the members of firms here represented, in order that we may learn their views touching this important question.

The President: I had indulged the hope that it would not be necessary to call upon them, but that there would be a prompt response. We would be glad to hear from the various sections of the country. This country is so large, and the market so extensive and divided, that a general expression is desirable. I wish we could hear from Cincinnati.

Mr. I. B. Resor: I have only to say that we consider the recommendation of the committee as very conservative, and a very proper recommendation. I know in our section we consider that the prices cannot bear much cutting down from those recommended. There would be no profit in it, and, so far as the iron market is concerned, that has been pretty thoroughly discussed. Individually, I do not anticipate that iron will go above \$30 a ton. I think possibly it will be less than that during the season. I cordially approve of the recommendation of the committee.

The President: In a certain section we have a considerable number of small foundries who put their goods upon the market at pretty low prices, and Mr. Bradley, of Pittsburgh, is probably affected as much as any other party by coming in contact with the class of foundries that I refer to. If Mr. Bradley has any remarks to offer, we would be glad to hear from him.

Mr. Bradley: Yes, we have been annoyed a good deal with Cleveland. (Laughter.) I think they have got through with that. I think it is like the fellow who took the small-pox—they will never take it the second time. (Laughter.) As far as pig iron is concerned, my views have changed considerably since I have heard the gentlemen talk here. I don't think pig iron will go over \$30. I think it will be under \$30 all the year. However, I don't know. The demand is very great, although much is being made. Around our section stocks are lighter than they have been for several years. Although the yield of the furnaces is so much greater than it was before, they have been putting up new steel factories so as to use up the product as fast as they make it, and where it will end I cannot tell. I think the recommendation of the committee is a very reasonable one.

The President: We would like, too, to hear from the village of Chicago. Will Mr. Cribben favor us with his views?

Mr. Henry Cribben: I must agree with the report of the committee in the matter of pig iron. I am of the opinion of those who have spoken before me, that it will not go beyond \$30, and I think it will range from \$24 to \$30, and I think the recommendation of the committee a good and wise one. We are in the pot business, but not directly; we are only indirectly interested in the stove business. Therefore, gentlemen, I have little to say.

The President: Will any others favor us? We hope to have a very free expression. We would be very glad, if Mr. Jewett is in the room, to have him favor us with some of his views.

Mr. Josiah Jewett: Mr. President and Gentlemen—As one of the committee whose report is now before you, you will find my sentiments expressed there as clearly and more clearly than I could now set them forth. I desire merely to say that I think the more closely all the members of the association adhere to the recommendation of the committee, the more satisfactory will the results be for the year 1881. I will also add, in regard to the pig iron market, that I think a large part of the increased consumption in the country will be met in the increase in the production of the blast furnaces—a very large increase, to which Mr. Bradley alluded. There is also a point which has not been touched upon, and that is that there is a very large increase in production in Scotland and England, so that any increase in consumption abroad will be partly met by that increase in production. I do not think therefore that present circumstances warrant any rapid advance in the price of pig iron. I think it will remain firm at about present prices, with, possibly, a slight advance during the next six months.

The President: We would like to hear from the conservative portion of our membership. We would like to hear from Mr. Van Wormer, of Albany.

Mr. J. Van Wormer: Our wares scarcely enter into so low a rate as 6 cents a pound, taking that class of stoves which call for a little higher price than that. I must say that it is a very low price, considering the condition of things. The prospect regarding iron and the wonderful increase in wages

make the price appear quite small enough, and I am surprised that it has remained so low. The larger manufacturers who engage in a class of stoves that enter into competition with another class of manufacturers who are represented in the association, can probably tell why. I think the price recommended is very low indeed, considering the condition of things connected with the business.

The President: We have not heard from any of our Detroit friends, but perhaps the reason is they do not think they make any goods that would come under that order or classification. I should judge so from the visit some of us made to the warehouses yesterday. Has Mr. Tefft any remarks to make?

Mr. Wm. H. Tefft: I do not know that I have anything in particular to say, Mr. President. I was in hopes that the prices established last year would not be reduced, which I think was 6 1/2 cents, the same being adhered to at the summer meeting. It seemed to me that that price was as low as it ought to be made. In fact, we are making goods that we charge considerably more than that for. So far as the price of common goods is concerned, where the price was made 6 1/2 cents, I think in many cases they have been sold as low as 6 cents. If the price is now established at that I hope that it will be adhered to, and no cutting upon the rate. I agree with some of the remarks made by the gentleman who last spoke in regard to the price of pig iron. For one I do not believe that the price of foundry iron is going to rule as high as \$30 a ton this year. I think that contracts can be made to-day for the season at pretty near the ruling rates. If any one is frightened in regard to the price of iron, he can hedge and can engage all he wants for the season at the going rates.

The President then put the motion recommending the prices stated in the report, and the same was carried.

The recommendation of the committee, fixing the price of odd plates at 8 cents, was also carried, after much discussion—the feeling appearing to be that the price ought rather to be advanced than reduced.

Mr. John S. Perry then read the succeeding recommendation of the report as follows:

"We recommend that the discount on hollow-ware shall not exceed 50 per cent."

Mr. W. H. Tefft: We ought to hear from the hollow-ware manufacturers upon that subject.

The President: Why not hear from some of those modest hollow-ware men of whom we learned last evening? Will Mr. Thomas favor us?

Mr. D. M. Thomas: Mr. President and Gentlemen—You have recommended very fair prices for second-class stoves. I do not see why hollow-ware should be sold at any less remunerative price than you sell second-class stoves. My friend Barbour went 5 per cent. on the list, making the price he got for his hollow-ware 3 1-12. Now, hollow-ware costs us to manufacture about as much as your second-class stove costs you. Why should you sell it for any less? I fail to see any reason, unless it is because hollow-ware men are despised and poor, and their wares made in State prison. But still there is labor about; there is a cost to hollow-ware, gentlemen! (Laughter.) But some of you stove men who have been selling hollow-ware, and especially those who have bought hollow-ware, seem to think that it can be manufactured without cost. It costs something more than pig iron and molding. There is some expense in doing the business. I say, certainly, that hollow-ware sold to retailers by stove manufacturers, or those who purchase it from us, and especially those who manufacture it themselves (because they are the worst off after all) should be sold at not a greater discount than 50 off the list. That would enable them to pay us a fair price for our goods, and enable us to make a fair profit upon them. I hope some action will be taken by the convention on the question of hollow-ware, because it has been in a very bad state since the 1st of September. I think my brethren will bear me out in saying there has been a money in it, and some of us have lost a lot in it, I think.

Mr. Jones: We differ upon the price of pig iron, and of course there will be a difference upon the cost and price of hollow-ware. I was passing through Ohio about three months ago, and I believe the price quoted there for hollow-ware was 65 off, by not 60 off a Michigan house, but a Chicago house also. I heard the remark made by a certain person, whose name I will not mention, that Michigan people were quoting 65 off for hollow-ware, and that Perry & Co. were ahead of that yet—they were quoting 60 and 10. I have a quotation from Elmira. There is too much difference between the present price and that quoted to the jobbers and that you are going to make to the retailers. The present prices quoted by the manufacturers to the jobbers I think is a fair margin of profit at the present time, unless our men strike for an advance in wages. (Laughter.) We sell to the hardware trade as well as to the stove trade. We have, however, an outlet for our manufactured goods, and in selling to the hardware trade on the same basis as we sell to the stove trade, the difference is too great for the hardware trade, because they can't stand prosperity the same as the stove men can. (Laughter.) The difference between 60 and 50 is considerable. The stove men do not pretend to make more than 12 to 15, or, perhaps, 20 per cent. on their goods, and, consequently, the hollow-ware trade will be demoralized the same in the future as in the past. I think 50 per cent. is too low a discount for the stove men to attempt to get. A number of them who have got their pots and kettles the same as their pig iron feel very well satisfied about it, and do not care what the price is. Even at the present prices, which can be contracted for for the next six months, the margin is too great. I should put it at 50 and 50 or 50 and 10, even at four months' time. Mr. Thomas has been able to manufacture about as cheap as we who employ prison labor, and yet seems to be making money. We know we have not lost any money, and we do not want to make so very much. We are modest, the same as Brother Cribben. He has been buying quite an amount in January,

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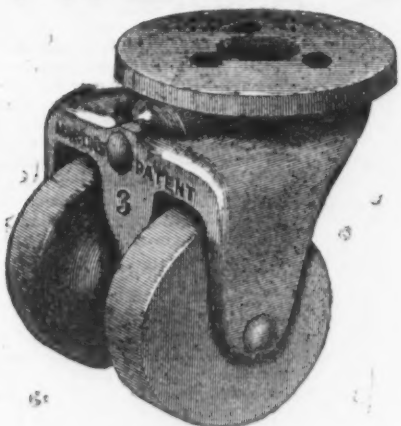
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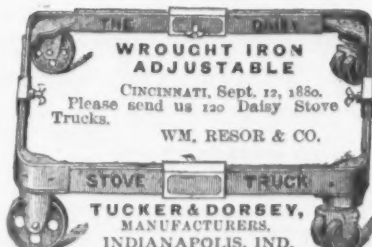
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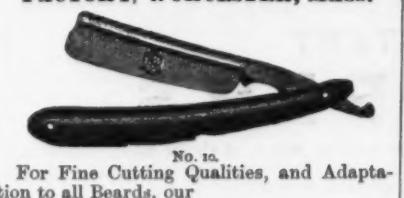
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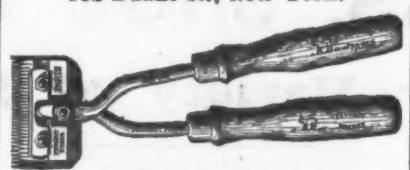
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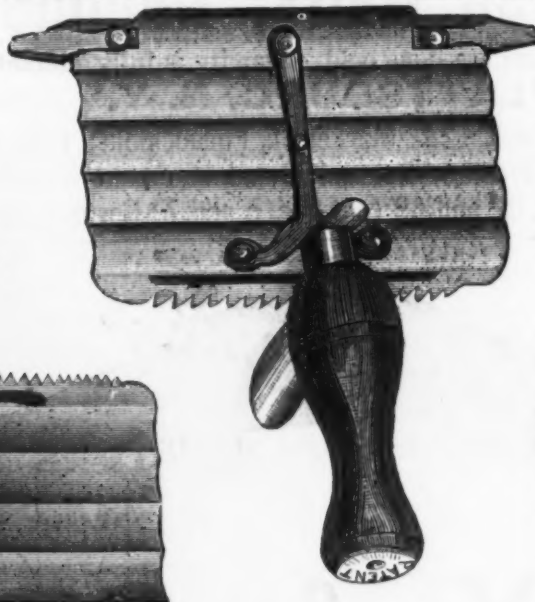
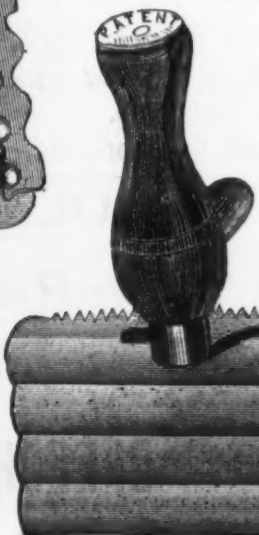
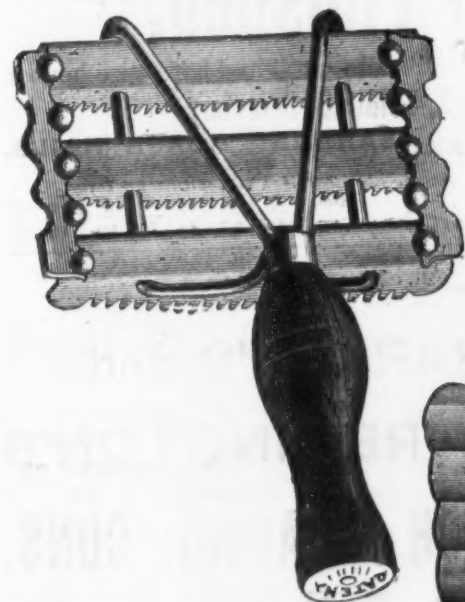
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which we are manufacturing in connection with the "PERFECT," but which are not subject to the conditions governing the prices of the "PERFECT," and are universally acknowledged to be the best low-priced Combs ever offered to the trade.

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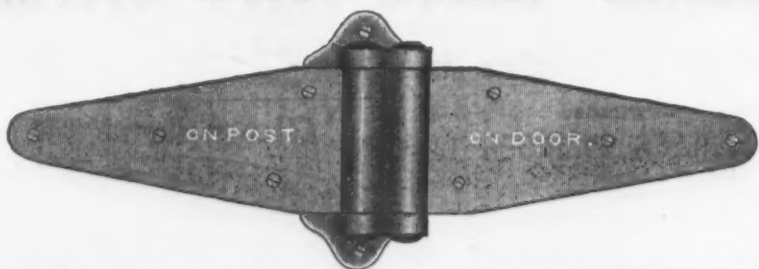
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made for fastening wire fences, being infinitely superior to
the ordinary staple, and is of the same weight. Drives
into Hard Wood as well as into Cedar posts without
crippling. Farmers give them a try! Railroads use your
old ties for posts! We make a nail long enough to go
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In the formation of the joint of this Hinge we have the strength of the whole
width of the strap, instead of one-third, as in the ordinary Hinge. The leaves and
rivets are wrought iron, and the malleable parts on the sides (all of which have been
tested) form a brace when secured to the post, thus giving additional strength; and as
strength in a Hinge, rather than length of iron, is the main object, the patent
is cheaper than the common. To avoid confusion, we number them as follows:

Patent Extra Heavy	No. 5 1/2	6 1/2	8 1/2	10	12
Width of Strap at joint	2	2 1/2	2 3/4	3	3 1/2 in.
They are three times stronger than the common	6	8	10	12	14 in.

The numbers and length of the Patent Hinge are identical. We shall prepare a line of
Heavy Strap, of same length, but one-half inch narrower than the extra heavy.

LEWIS & CODMAN, Sole Agents, Columbus, Ohio.

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Ground Emery, Corundum & Flint, Glue & Curled Hair, Hair Felt, & Felt-
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NEW YORK, 67 Beekman St. CHICAGO, 182 Lake St.

feeling he could purchase a good deal cheaper
in January than he could make it. I think
to put it at 50 and 10 would enable the hard-
ware trade not to compete too much with
you, and avoid the demoralization that has
existed in the hardware trade for the last
three months.

Mr. D. M. Thomas: I would like to ask
Mr. Jones one question—whether he thinks
that 60 off is too high a price for hollow-
waremen to get from stove manufacturers?

Mr. Jones: I think it is a little too
high. We should like to get 50 off if we
could, but then it is a pretty good price to
pay for hollow-ware.

Mr. D. M. Thomas: You think 60 is too
high?

Mr. Jones: I think 60 and 5 would be
nearer right.

Mr. D. M. Thomas: At four months?

Mr. Jones: Either cash or four months.

Mr. D. M. Thomas: Take it on a cash
basis. You buy at 60 and 5, cash, and you
get a difference of 20 per cent. Let me ask
whether he thinks 20 per cent. of gross profit
is sufficient to pay him for his trouble in
selling it and his risk in collecting the money
and handling the ware, together with the
breakage there is in hollow-ware—because it
will break, like your stoves—considering,
also, the interest on your money and stock?

Sometimes you do not get all your money if
you sell at 50 and 5 off for cash. You get
the greater part, to be sure, but not all.
Then, too, your men are careless. I do
not know any gentleman that can handle
10 tons of hollow-ware without
breaking 5 per cent. of it. You also
get it rusty, and have to send it back to be
done over. You do not want to do your
stove business on that basis. I do not think
you would be content with 20 per cent. on
stoves; that is, if you only handled a few
dollars' worth, as we have to, of hollow-
ware. I think, therefore, that the price I
quote, of 50 per cent., is a very reasonable
one. If you cannot distribute our hollow-
ware for us and we realize something for it,
we are not going to do it. If we had to put
men on the road, as you do, to sell it we
should not be willing to stand at that price.

The President: Does Mr. Jones offer an
amendment to the resolution?

Mr. Jones: I offer 50 and 10 simply to get
around the trouble we have been in for the
last three months, from the cause attributed
by the Michigan Stove Company. The hard-
ware men sell below the stove men.

Mr. D. M. Thomas: Was there any recom-
mendation upon hollow-ware?

The President: Fifty per cent.

Mr. D. M. Thomas: I did not hear the
recommendation when it was read, and
therefore the committee's views and my own
are in harmony.

Mr. Geo. H. Burton: From the remarks
of Mr. Thomas, I judge that he lays the re-
sponsibility of the hollow-ware prices to the
Michigan Stove Company. We refused to
give 60 at this point, but in Chicago they
came in at 60 off. I called Mr. Phelps' at-
tention to it, and he said he was merely
quoting the price of those selling hollow-
ware there. The thing went along for a little
while until the 25th of November. I met one
of our small dealers and he gave me an order
for spiders, and perhaps two dozen pieces
all told. He asked the price and I told
him 55. He says, "I have been offered 60."

I says, "Where?" "Detroit," he replied,
"and I have circulars from Chicago." I
says, "At what rate?" and he said "At 60
and 5." Then I made up my mind we could
sell hollow-ware as low as anybody, and I
was upon the point of putting it at 70,
thinking we could lose a little money by it,
but finally I concluded upon 65. We did
not cut the price, but simply followed in the
wake of others. We are willing to adopt
any reasonable price which may be adopted.

Mr. Jones: I withdraw my amendment.

The Chair then put the question upon the
adoption of the recommendation of the com-
mittee, and it was carried.

Mr. John S. Perry read the next recom-
mendation of the committee respecting
terms of sales, credits, &c.

The President: What will you do with the
recommendation?

Gen. Rathbone: I took occasion yesterday,
in the few words I had to offer to the con-
vention, to allude to the competition that I
think I characterized as needless among our
hollow-ware brethren for a part of the last
year, reducing business to a positive loss that
was entitled to a fair profit, and I have lis-
tened with a great deal of attention to
what has been said as to the hollow-ware
business. I do not know
that I have any special interest in it
except as a member of the association,
for I do not make a piece of hollow-ware.
I am very glad to know that the recom-
mendation of the committee has been
adopted, and I hope it will be adhered to.
There is no reason why the hollow-ware
manufacturers, although much of the goods
are manufactured in State prison, should
not make it at a profit, and no reason why
they should not receive a compensation for
the capital employed.

As to the question pending in reference to
the credits which shall be given for stoves
and hollow-ware, it seems to me a very impor-
tant one. You will pardon me for referring to
the remarks which I submitted yesterday by
permitting me to repeat that, in my judg-
ment, in these times of cheap money, when
labor is promptly paid, and when the agri-
cultural community have been receiving a
fair price for their products, the credits that
have been common among the stove manu-
facturers should be curtailed. In my judg-
ment the majority of the bad debts which
have been visited upon us as merchants
have been the result of long credits, and
the practice, which has become a habit of
extending the time of payment beyond that
named in the original contract of sale. I
know that has been the experience of the
house I represent. Three out of four of the
bad debts that have come to us, and from
which we have suffered, have been the result
of long credits, or if not long credits as
originally given, of extending the time of
payments. I trust that this convention will
meet this recommendation of the committee,
and will feel its importance. I know it is
very common when our travelers visit our
customers in the country for the customer
to pretend that he is not anxious to purchase
goods. Again and again has this question

been before the association of the extreme
eagerness on the part of our travelers to sell.
After much persuasion, the customer may be
induced to give an order, provided he can
get six or seven months' credit instead of four
months, and this long credit is accepted by
the founder. There is no reason to-day, con-
sidering the condition of our country and its
furnaces, why a longer credit than four
months should be given, and I wish it might
be the sense of the association that credit
upon stoves should be reduced to 60 days. I
believe it would be a step in the right direc-
tion. I remember to have read within the
last few months a very able article in a New
York paper comparing the failures of the
past year with those of some preceding
year, in which the position was assumed and
sustained by the writer that the reason for
the large number of failures, and the conse-
quent loss to creditors, was due to the sys-
tem of long credits, and I believe it to be a
fact. I trust, therefore, unless some mem-
ber of the association is prepared to offer the
amendment I have suggested, that the
recommendation of the committee will not
only be adopted by the association, but that
it will be carried into effect and become the
uniform rule of the members.

Mr. Henry Baldwin: I would like
to propose an amendment like that sug-
gested, but for the fact that the house I
represent sell for the purpose of retail-
ing. Under no circumstance do we sell
on longer credit than 30 days' time. I
would like to propose, as an amendment,
that it should not exceed 30 days' credit.

Mr. Wm. H. Tefft: I suppose that Gen.
Rathbone's motion was for the wholesale
trade and not for the retail trade. I do not
suppose any in the retail business would sell
at over 30 days.

Gen. Rathbone: I did not make a mo-
tion, Mr. Tefft. I hoped that some member
of the association would do so.

Mr. Wm. H. Tefft: I think making it 30
days would reduce the number of stove
dealers 50 per cent., and, therefore, I hope
the recommendation of the committee will
be adopted and not the amendment.

Mr. H. Baldwin: Perhaps the gentleman
misunderstood me, or perhaps I misstated.
I said the house I represented would not sell
stoves to any but persons engaged in the re-
tail trade. We sell to the retail stove trade.
We do not sell for the purpose of wholesaling.

The amendment of Mr. Baldwin was not
seconded.

The President: There is one feature of
the credit system that I would have been
very much pleased had some one suggested
it. I understand the St. Louis and Cincin-
nati people have, for a number of years, in-
sisted upon monthly statements and have
obtained notes for the deferred payments. If
they do not pay cash, and prefer to take time,
they give their notes. In Cleveland we have
adopted that system. A year ago this spring
we commenced it. We entered upon it with
some hesitation, but I am happy to say it has
worked charmingly. I do not hesitate to
say that there are from 75 to 80 per cent.
who respond promptly with their notes.
It makes a wonderful difference in the
collection of our debts. I would be glad
to have an amendment offered putting it
upon that basis. If there is nothing fur-
ther to be offered upon the recommendation,
I will submit the question.

Mr. Grange Sard, Jr.: I think the amend-
ment suggested by the president might be
incorporated into the report, viz.: Where
it says "four months," substitute "four
months' note." I think the practice of ask-
ing for notes and getting them is becoming
more and more general, and ought to be
encouraged. I move that the word "note"
be inserted in the recommendation.

Seconded.

Mr. Perry accepted the amendment.

The President: The recommendation is
that the credit shall be four months and the
settlement by note.

The question was then submitted and
carried.

Gen. Rathbone: I suppose the report of
the committee as a whole should be adopted.

Mr. Wm. H. Tefft: Before that motion is
put I would make a suggestion in regard to
the cash discounts—what the discount shall
be for cash, whether it is settled with cash
or by a note. I would add that the discount
for cash, when paid promptly in ten days,
shall not exceed 5 per cent., and 1 per cent.
a month after that.

Seconded.

Mr. Grange Sard, Jr.: I made a similar
motion to that last winter and tried to put
it into operation, but I found it miscarried,
and I am fearful similar results will follow
if now tried. I do not believe in paying 5
per cent. for money for three months, and
unless the rule is generally adopted it would
be useless for the minority to attempt to
carry it out. Therefore, if our recommend-
ing it is simply a failure and a farce, I think
it is better not to recommend it.

The President: I am surprised that there
is any difficulty in carrying it out.

Mr. Grange Sard, Jr.: Does Mr. Tefft
think his proposition practicable?

Mr. Wm. H. Tefft: I do. I have heard
some parties claiming 10 per cent. discount
for cash.

Mr. Grange Sard, Jr.: Do you think it
proved practicable last year?

Mr. Wm. H. Tefft: That was not carried
out.

The President: Any further remarks upon
this motion of Mr. Tefft?

The question was then submitted, and the
Chair being unable to decide, a rising vote
resulted in the adoption of the recommenda-
tion.

Mr. John S. Perry: Mr. President—At
the banquet last evening, Mr. Bayles very
kindly made a suggestion relative to an
organized effort on the part of the associa-
tion in connection with the World's Exhibi-
tion to be held in New York city in 1883.
Certain it is that the suggestion is worthy of
attention, and arrangements should be inau-
gurated and perfected to furnish a display
alike creditable to the trade and worthy of
the nation, and, in view of the ideas, I offer
the following resolution:

Whereas, The suggestion that the National
Association of Stove Manufacturers apply
for space in the New York Exhibition of
1883 for a grand national exhibit of the
products of our industry, is one meriting the
most careful consideration;

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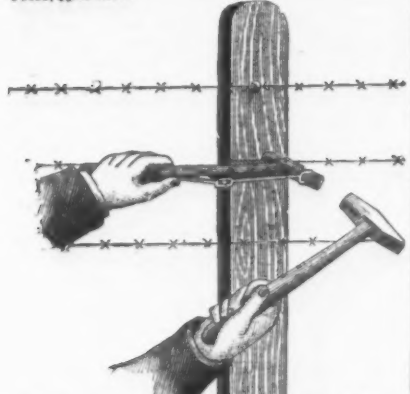
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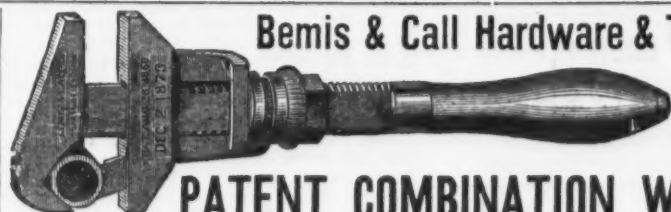
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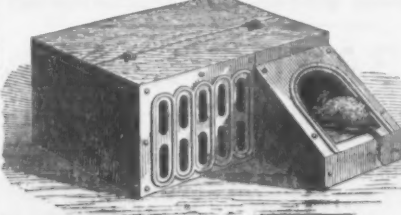
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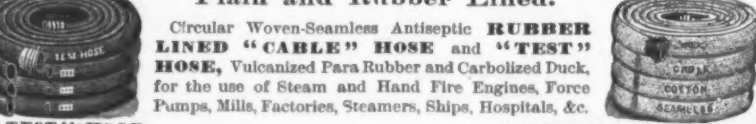


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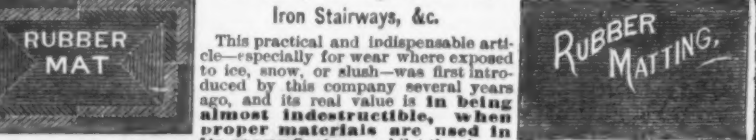
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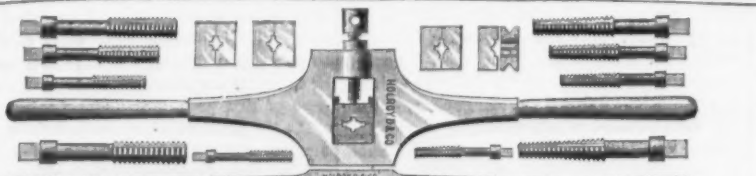
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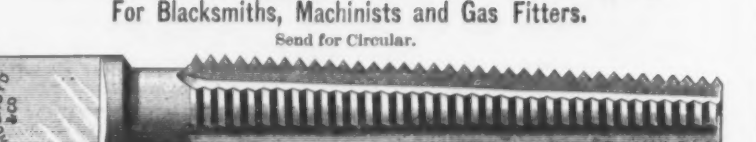
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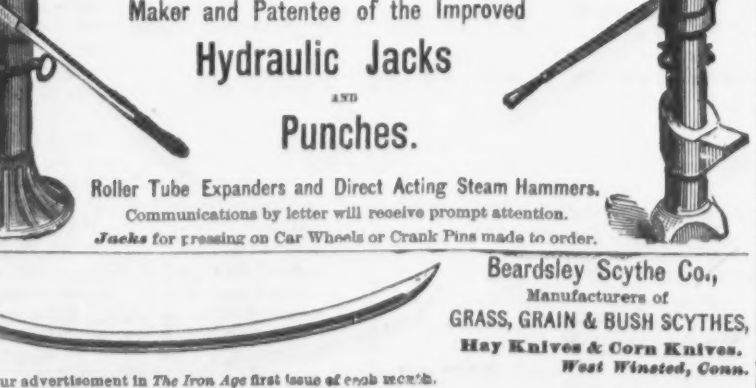
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See our advertisement in The Iron Age first issue of each year.

Resolved, That a committee of three be appointed to consider the matter, and take whatever steps may be necessary between this and the next meeting to carry out the plan, if it shall be deemed feasible, and that said committee be instructed to report at our next meeting.

The President: We will now act upon the recommendations of the committee as a whole.

Gen. Rathbone moved its adoption by a rising vote, and the report was then adopted by a large majority.

Col. A. P. Warren: In rising, Mr. President, to second the resolution of Mr. Perry in regard to the exhibition in 1883, I would suggest as an amendment that the committee have power to fill any vacancies that may occur either from resignation or other cause.

Gen. Rathbone: I move as an amendment that the committee consist of 5 members instead of 3.

Mr. Perry accepted the amendment, and the resolution was adopted.

The President inquired who should appoint the committee, and a member replied, "the Chair."

Col. Ed. Bowditch: Mr. President, I deem the matter brought up before us as a very important one, and it would be well to have a strong committee—men who will do some work and who will not be simply figureheads. I think it would be well to give the Chair time to consider whom he shall appoint upon the committee, and for that reason I move that the Chair be allowed time in which to consider the matter, and when the selection is made to notify the appointees.

Seconded.
The President: I am very glad of the suggestion of Mr. Bowditch.

The motion was then carried.

The Floor Beams of the East River Bridge.

The steel suspenders which for months have been dangling idly on each side of the Brooklyn tower are now being utilized. Three of the steel floor beams have been swung into position. This work was begun on Thursday, the same day, by the way, that the last block of granite was lifted into its place and the Brooklyn approach to the bridge, so far as masonry is concerned, was pronounced finished. Each floor beam is in two sections about 40 feet in length, which, welded together at their ends, form the extreme width of the bridge flooring—85 feet. Each section weighs two tons, and notwithstanding the immense weight, the two are easily hoisted to the tower roadway, 120 feet above the ground, by means of an endless wire cable. In appearance the sections resemble the brass work on which are laid the tracks of the elevated railroad. The upper and lower chords or beams of each section are strongly welded together by means of diagonal braces.

The method of hanging these weighty sections from the suspenders is peculiar. At the ends of the latter are large steel plates, which, from their height above the deck of a ferry-boat, are dwarfed to the size of a button whose two holes are no larger than pin-points. Screwed into each of these holes is a long steel bar, which passes downward through two plates, one on the top and the other on the bottom of the section, and terminates in a huge nut. The advantages of this method are that the sections may be elevated or depressed to counteract any unexpected stretching or tightening of the suspenders, two of which will be required to support each section. Three floor beams will be hung on the water span, and on Monday the work of laying an equal number on each side of the New York tower will be begun. Col. Martin and his workmen will push this work as fast as the Edgemoor Steel Company can furnish the material. The company, Col. Martin says, has the steel at its shops, and its complicated machinery is now so perfected that within a few weeks it can fully supply the parts necessary to complete the truss-work. There are to be six of these trusses running lengthwise of the bridge. They are, in fact, the division lines between the roadways, the tracks for steam cars and the footpaths for pedestrians. The top and bottom chords of these trusses will be braced diagonally with broad strips of the best steel. The two roadways will be on the outer sides of the bridge, the footpaths exactly in the center, with a railroad track on either side of it. Two courses of timber will be used for the flooring. The lower, which is intended to be permanent, will be of yellow-pine 4 1/2 inches in thickness, and the material is now being soaked in creosote to toughen it against the action of the weather. The upper flooring, which will be replaced as fast as it wears away, will be of white oak 2 1/2 inches in thickness. Col. Martin has now about 150 men employed on the bridge, nearly all of whom have been at work on the structure since its foundations were laid. When the Edgemoor Company begins to send along supplies regularly, he can push the work of laying the floor beams with great rapidity.

Draining the Everglades.—A press dispatch from Philadelphia, under date of Feb. 17, says: An immense transaction, involving the reclamation of 12,000,000 acres of land, or one-third of one of the States of the Union, has been undertaken by a company of this city. About one-third of the State of Florida is a huge swamp termed "The Everglades," a dark, impenetrable, unknown region. No white man has ever fully explored it, and all that is known of it is that it is a great swamp with a number of lakes, and here and there islands, upon which roam wild beasts, but withal a place of wonderfully luxuriant vegetation. On its outskirts a few miserable human beings, a mongrel race of white, Indian and negro blood, manage to exist in a state of barbarism. These are the descendants of the unconquered Creeks and Seminoles who retreated to the fastnesses of the swamp before the United States army. The project of reclaiming this region has been talked of for years, and it has long been considered feasible by many eminent engineers. Under a contract with the State of Florida a Philadelphia company is about undertaking this

great scheme. The leading man in the enterprise is Hamilton Diston, a young gentleman of energy and ample fortune, and the head of the saw manufacturing firm of Henry Diston & Sons. Associated with him are ex-Sheriff William H. Wright, W. C. Parsons, Whitman H. Drake, A. B. Linderman, all of this city; I. Coryell, of Florida, and several others. Under the agreement already made with the State the company is required to begin surveys within 60 days, and within 6 months to put a force equal to 100 men at work and continue the work until the land is reclaimed. It is proposed to drain the land by a canal from Lake Okeechobee to the Caloosahatchee River, which empties into the Gulf of Mexico. Another canal may also be constructed to the East, tapping the St. Lucie River, which flows into the Atlantic. These canals will entirely drain the swamp, and from 10,000,000 to 12,000,000 acres of the richest land in the world will be reclaimed. The company will receive for the work one-half of the land recovered, and it is expected that this will repay all expenditure of money which may be made in the work.

The First American Angle Iron.

The Pittsburgh Dispatch, in a biographical sketch of Mr. Robert Hastings, says: Mr. Hastings came to this city from Chester County, in 1811, when he was but three years old. The earliest event he recalls was the departure of a steambot for the lower country in 1812, and he believes it was the first steamer that parted the waters of Western rivers. In 1822 the Robinson Bros.' glass house was on First street, between Ross street and Suke's run. Soon after this Mr. Hastings went to work in the Union Rolling Mill, where a mechanic named John Carson had invented a tool to bore pump logs. The process of refining the iron the puddlers used was as follows: Raw pig iron was charged in an open-hearth refinery, the fuel used being coke. It was melted by a powerful blast cylinder, and ran into a large cast-iron mold, where it remained until it was nearly cold, and then lifted out and dropped into a water-bath, in which the slag separated from the metal, leaving the latter a slab of iron about 2 feet wide, 6 feet long and 2 1/2 inches thick. It was then broken into small pieces and 300 pounds charged at a heat in each furnace. The first angle iron made in the United States was rolled in the Pipetown Mill. During a visit to a machine shop Samuel Leonard, one of the proprietors of the Pipetown Mill, saw a blacksmith turning angle iron on an anvil, and after observing him for some time he told the proprietors of the machine shop that he could turn a pair of rolls to make angle iron. The proprietors of the shop authorized Mr. Leonard to make the rolls at once, which he did. In the same rolls he turned three grooves for rolling ell iron, and when the rolls were finished and placed in position, a trial demonstrated that they were a complete success. The ell iron was used for salt pans, and was rolled 3/4 inches thick. In the summer of 1839 Mr. Hastings rolled angle iron 1/2 inch thick for the ribs of the steamer Valley Forge, the first iron steamer built in this country. The first T iron Mr. Hastings ever saw was rolled in the Pipetown Mill. It was 4 inches on the T, 5 inches on the leg and 1/2 inch thick. It was made for the ribs of the Government steamer Allegheny, built on the east bank of Suke's run. Her crossbeams were ell iron, 7 inches by 4 1/2, and 3/4 thick. It was the heaviest iron Mr. Hastings ever rolled, the blooms weighing 800 pound each.

Imports of Philadelphia for 1880.

Summary statement of the values of goods imported direct from foreign countries to Philadelphia for the year ending December 31, 1880:

	American vessels.	Foreign vessels.	Totals.
Azores.....	\$17,301	\$17,301	\$34,602
Belgium.....	2,165,498	2,165,498	4,330,996
Brazil.....	102,657	102,657	205,314
Chili.....	106,571	106,571	213,142
Cuba.....	5,731,800	1,837,783	7,569,583
Denmark.....	7,268	7,268	14,536
Dutch West Indies.....	32,394	32,394	64,788
England.....	8,368,976	15,758,465	24,127,441
British Possessions			
in Africa.....	430	430	860
British East Indies.....	4,595	4,595	9,190
British West Indies.....	189,702	189,702	379,404
British Guiana.....	24,289	24,289	48,578
British Possessions, all other.....	3,925	3,925	7,850
France.....	3,444	440,906	444,350
French W. Indies.....	493,480	494,057	987,537
French Possessions			
in Africa.....	56,499	56,499	112,998
Germany.....	31,426	672,125	703,551
Greece.....	14,854	78,808	93,662
Haiti.....	180,528	180,528	361,056
Hayti.....	76,421	31,579	108,000
Ireland.....	25,783	25,783	51,566
Italy.....	74,745	1,000,790	1,075,535
Mexico.....	58,063	25,094	83,157
Netherlands.....	225,594	225,594	451,188
Nova Scotia.....	81,739	14,513	96,252
Ontario.....	600	600	1,200
Portugal.....	42,175	214,006	256,181
Porto Rico.....	25,873	18,354	44,227
Russia on Baltic.....	30,376	56,547	86,923
Russia on Blk. Sea.....	486,203	486,203	972,406
Scotland.....	30,581	158,576	189,157
Spain.....	3,216	688,131	691,347
Sweden and Nor.....	359	492,008	492,367
Turkey in Europe.....	16,416	16,416	32,832
Turkey in Asia.....	31,100	31,100	62,200
U. S. of Columbia.....	9,555	9,555	19,110
Uruguay.....	4,509	4,509	9,018
Venezuela.....	20,372	44,064	64,436
Total for 1880.....	\$15,501,167	\$71,428,665	\$86,933,832
Total for 1879.....	\$5,300,064	\$17,794,485	\$23,094,549
Increase 1880.....	\$10,201,103	\$54,634,180	\$64,835,283

The heaters used on the New York elevated railroads consist simply of pipes extending the entire length of the cars. They are coupled from one car to the other by means of rubber hose. The average amount of steam supplied by the locomotive is at a pressure of 25 pounds. This is regulated by a small "pop valve," arranged in the hose under the rear platform of the last car. When the steam reaches any pressure over the desired amount, the valve is raised and allows it to escape, thus protecting the hose from bursting when the pressure becomes too great.

According to M. Lodin, the corrosion of iron boilers is due, for the most part, to the absorption by the iron of the oxygen in the water, and but slightly by the absorption of the oxygen set free by the decomposition of the water.

The Iron Age

AND
Metallurgical Review.

New York, Thursday, February 24, 1881.

DAVID WILLIAMS . . . Publisher and Proprietor.
JAMES C. BAYLES . . . Editor.
JOHN E. KING . . . Business Manager.

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Although four-fifths of all the business done at the Mint in Philadelphia comes from New York, there is difficulty in getting an appropriation of \$30,000 with which to add another story to the Assay Office in Wall street. The enormous receipts of foreign coin, amounting to \$63,000,000 this year to date, against \$75,000,000 last year, all first come to the New York Assay Office, to be smelted and refined preparatory to sending it to Philadelphia to be put into coin. The Philadelphia Mint is thus actually a branch of the New York office. The bill presented by Congressman Muller at the last session, which provided for a mint in New York, came to nothing, in consequence of that gentleman not being re-elected; but Philadelphia meanwhile has secured

\$350,000 "for public buildings;" and this will be enough to begin with in providing enlarged facilities at the United States Mint. New York, therefore, must content itself with one more story to be added to the present building, which was erected in the year 1854. At that time its capacity was estimated at about \$3,000,000 per month, but the demands upon it now are for three times that amount. As might be easily imagined, the space available for offices and operating rooms is exceedingly contracted, and the work of refining is done under serious disadvantages.

The Practical Value of Chemical Analyses.

At the recent meeting of the American Institute of Mining Engineers, the chemists received a handling so rough that they will probably have good occasion to remember it for a long time to come. Possibly it will have for them the beneficial effects which usually follow plain, honest and unsparring criticism. It will make them somewhat more careful in challenging, on the basis of their analyses, the opinions reached by engineers from other methods of investigation and experiment. Many chemists have an exaggerated idea of the value of laboratory work. It is of immense value in connection with mechanical tests and accurate observations of physical phenomena; but, taken by themselves, the results of even the most careful analyses cannot always be accurately interpreted nor intelligently understood. The chemist naturally inclines to generalize somewhat more broadly from what he learns of the composition of matter, than facts will always warrant. If, from the many sharp things said in the discussion of Dr. Dudley's very interesting paper on the "Wearing Power of Steel Rails," the chemists learn that the scientific world is not prepared to accept as final what they think they have discovered, simply because they think they have discovered it, they will be more careful in their generalizations, and science will lose nothing thereby. We do not wish it to be understood from these remarks that we consider that Dr. Dudley's very valuable investigations have led him to conclusions as erroneous as some of his opponents have claimed, or that we have lost faith in the value of his work because he was called upon to defend it single-handed against sharp and well considered attacks from every point; but we think that the chemists will profit not a little from the very plain talk called out by the discussion, and that they will learn from it that until they can reduce the margin of error which remains in the most careful chemical work, their utterances are not likely to be regarded as infallible.

In another respect, however, we regard the discussion as unfortunate, and recall with no little regret many of the sharp things said. Talk of this kind can do no possible harm in a scientific body like the Institute, but its effect on the outside world may be far-reaching and serious. Its influence in shaping the opinions of the class of so-called "practical men," who largely represent the ownership, and, to a great extent, the technical management of our metallurgical industries, is likely to be much greater than was supposed or desired. A few years ago chemical work was regarded by this class of self-educated men as of minor importance. They had learned practically how to reduce ores and work the metal extracted from them, and placed their own judgment far ahead of that of theoretical men who looked to the chemist for information as to what they were doing. Generally speaking, they were mistaken, and as the conditions of success in metallurgical industries became more circumscribed and an intelligent attention to minor economies an imperative necessity, they began to discover that chemical analyses had a value. With a younger generation of better educated men pressing for advancement to their places, and bringing to their work a thorough elementary training, gained in the technical schools, the "practical men" could not afford to make any mistakes. They began to take an interest in analyses, and one works after another equipped a laboratory and engaged a chemist, until an establishment not thus provided was regarded as behind the times and quite unprogressive. The "practical men" could soon quote carbon, phosphorus and silicon percentages as glibly as if they had never known anything else. But the actual benefits of a little chemical knowledge were not always as great as was expected, and those who paid the chemists' salaries were, as the rule, inclined to much liberality. The idea that a chemist was a chemist, and that one who would work for mechanics' wages, or less, was practically as useful as one whose services commanded a higher price, gained currency, and many good men who had started as chemists in the laboratories of iron works and metallurgical establishments, were compelled to seek more lucrative employment, and their places in many instances were filled by men whose services were worth no more than employers were willing to pay. Much of the work thus cheaply done has been, and is, badly done, and men of good judgment have learned to regard miscellaneous chemical analyses as untrustworthy and misleading. This feeling was not without some foundation, and from over-confidence in analyses many men of controlling influence in our metallurgical industries became unduly suspicious of them. Now that so influential a body as the Institute of Min-

ing Engineers has devoted a large part of one of its meetings to what many will consider the demolition of a chemist's work, and to an attack on chemical investigations generally with horse, foot and artillery, many of those who reach convictions without much intelligent original thought on their own account, may imbibe a prejudice against chemists and laboratory investigations as unfounded as would be an unquestioning faith therein. We are sure that none would deplore this result more than the gentlemen who attacked Dr. Dudley most vigorously, and scored the best points against his paper. None depend so much as they upon analyses, and to none is the chemist more really helpful.

While we have no occasion to take exception to a discussion which was able throughout and at times brilliant, we should be glad to do what we can to prevent its having a mischievous influence upon a very large and important class who will gain little from it except a prejudice against chemists. It would be idle to deny that there is a great deal of slovenly and hasty laboratory work which has little or no value. This will always be the case so long as cheapness is made a first consideration and cheap men are sought for this work. We were once asked to aid the manager of an important iron works in finding a man to take charge of its laboratory. He must be qualified to make the most delicate determinations, and the amount of work expected of him was more than any honest analyst would be willing to undertake. But this was not all. The letter read: "I prefer one who can play on the violin. My wife plays on the piano and I the flute, and as there is no society here I thought 'if I could get as chemist a man who could play the violin, we could amuse ourselves evenings with musical practice. Living here is not expensive, and he would probably be satisfied with \$12 or \$14 a week.'" Whether our correspondent succeeded in finding a fiddling chemist for the price named we do not know, but the circumstance serves to illustrate what estimate some men in charge of important works place on the services of chemists. If, under such circumstances, boys fresh from the schools, or incompetent, half-educated men have often assumed the duties of chemist and given small value even for the meager salaries paid them, no one need be surprised, and those who have found such services practically useless have no right to conclude therefrom that analyses are too uncertain to be a safe guide in practical matters.

Let us give chemistry its true place. It has led the world's progress for half a century, and it will lead it with still more rapid strides during the next half century. It has preceded the practical man, lantern in hand, along all the untrodden paths of invention and discovery. It has become to every progressive industry what a cane is to the blind man. It does not follow, however, that we can depend upon it alone, nor that we can rely on every analysis handed us. Because the blind man finds a cane helpful, no one with unimpaired vision would be wise in shutting his eyes and walking with the aid of a cane. Still less would the blind man be wise to throw his cane away because it sometimes fails to detect an obstruction in his path. We have a right to distrust an analysis when it points to conclusions which cannot be safely accepted unproven, but the man who looks to the chemist for all the information which an intelligent study of the composition of matter can give him, will know more and act more wisely than the man who depends upon his practical knowledge or his general intelligence. When we are willing to pay for care, skill and experience in laboratory work, and the profession offers a career for ambitious young men who are now driven from it by the lack of promising opportunities in this field, the general standing of chemical work will be raised, and there will be a longer list of names which, appended to analyses, will command confidence. Meanwhile, no one who spends money judiciously in learning all that the chemist can tell him will waste it, while the owner or manager of works who is led by any of the caustic remarks uttered in the Institute discussion to feel that he can afford to dispense with the chemist's services, will make a mistake which none of those who participated in the debate are in the least likely to make.

The course of the German iron trade during the year 1880 had been looked forward to with much interest by those who expected an early and strong improvement, due to the adoption of the tariff in 1879. The events of the year have, however, had such an overshadowing effect that it is difficult to trace the influence of the protective system. The increase in production expected has taken place, but the reaction following the great "boom" has had its serious effects in Germany also, so that prices continued to decline from their temporarily high point until they reached the low figures prevalent before the tariff. The most striking feature, and the only one directly traceable to protective duties, is the increase in production. While in 1879 Germany turned out 1,617,621 tons of pig, she produced 1,990,506 metric tons in 1880. The output of wrought iron rose from 1,010,467 tons to 1,127,024 tons, and that of open hearth and Bessemer steel from 521,988 tons to 699,302 tons. The beneficial effect of the tariff has thus far been traceable in mitigating existing evils, rather than in producing an improvement evident by increase of profits.

American Manufacturers and the German Trade-Mark Laws.

A serious grievance of which American manufacturers—notably of hardware and agricultural implements—have had occasion to complain, is that the Germans have imitated American goods with impunity, as soon as the latter had gained a strong foothold by reason of superior quality or special utility. Cheap imitations of popular American novelties have been placed on the market, bearing the trade-marks and full names of the American makers in some cases, while in other instances a misspelling of the name or other minor changes have been thought necessary as a concession to existing laws. Aside from the direct loss of sales thus occasioned, a more serious injury inflicted upon our manufacturers has been that the quality has been inferior, so that those trading upon the excellence of American goods have, at the same time, undermined their reputation with the public. Not content with running down the standing of American manufacturers in their own country, they have entered foreign markets, and in some instances have succeeded in driving out the genuine article and creating a prejudice against it. This piracy—practiced for many years in different countries—has been growing with the appreciation of and demand for American specialties, and it is a source of much gratification to note that, so far as Germany is concerned, there is now a certainty of its being stopped whenever energetic measures are taken.

The credit of having pushed this matter to a successful issue is due to the Collins Company, of Collinsville, Hartford, Conn. They have just obtained judgment against one of the German infringers of their trade-marks and patents. During the forty years in which they have exported their axes, they have had occasion frequently to appeal to the courts in foreign countries for protection. They introduced certain special tools into Cuba as early as 1850, but soon found that English counterfeits were largely sold. After defeating the infringers in a series of suits in England, they found that the dishonorable industry was transferred to Germany, where it developed into such proportions that the genuine article was driven out of Cuba. Until 1872 there was absolutely no remedy for this piracy, and even for some time afterward little attention was paid to a treaty then made, which provided that citizens of the United States should be awarded the same protection under existing trade-mark laws as natives of Germany. Those laws were by no means strict, and infringements continued on a large scale in Germany. Decisions against the manufacturers and impositions of penalties in the shape of small fines, made them somewhat more cautious, but it was not until the laws were amended so as to deal more severely with offending parties, that there has been a prospect of putting a stop to their fraudulent practices.

The Collins Company instituted proceedings against a member of the firm of Büniger & Co., of Barmen, who were selling in Cuba tools exactly like those of the Collins pattern, but inferior in quality, under the trade-mark "Gobbins & Co., Stratford, George W. Gobbins," which was intended to be an imitation of "Collins & Co., Hartford, Samuel W. Collins." The Court decided against the German manufacturer, and, upon appeal, the decision was confirmed. The accused parties were found guilty of having placed edge-tools upon the market, after marking them, contrary to law, with a mark which could only, by close attention, be distinguished from that of the firm of Collins & Co. They were condemned to pay a fine of 1200 marks (\$300) and costs, or to suffer imprisonment for sixty days in case of non-payment.

As the first decision which defines the law against German counterfeiters of American goods, this deserves wide publication. It proves that American makers have it in their power to check any efforts to trade illegally upon their good name, and as Germany has of late years been the chief country in which this system of piracy has been carried on, there is every prospect that in the future one element which has rendered the export trade unsatisfactory will disappear. It is to be hoped that those of our firms who have had similar difficulties to contend with will promptly follow the Collins Company's example.

The annual report of the San Francisco Board of Trade refers to the efforts which have been making to obtain reciprocity with Mexico and the Central American States, which the board believe would secure a large portion of the trade now done by European competitors. An interview with the Minister from Guatemala on this subject, was very satisfactory. An effort is also making to divert from the Isthmus of Panama the trade in coffee, partly with the object of assisting producers of that article on the Pacific coast to compete more successfully with the products of the Atlantic side. A reduction of rates on freight destined to St. Louis and similar localities has been asked for, but neither the Pacific Mail Steamship Company nor the Central Pacific Railroad Company have taken any definite action. In regard to projects for crossing the Isthmus, the Nicaragua enterprise is regarded most favorably, but they "hope for one or the other, no matter which." The saving on last year's wheat crop alone is estimated at \$10,000,000, could either of the proposed routes have been taken.

The Stove Convention.

Elsewhere in this issue we print a very full and interesting report of the second day's session of the National Association of Stove Manufacturers, held in Detroit February 10th. This report has interest for others than those in the stove business, as it embodies an interesting discussion on the probable course of the iron market in the near future, in which gentlemen representing both the producers and the consumers of iron took part. For this reason we give it a larger share of our space than could otherwise be spared for it.

Concerning the meeting as a whole, we are happy to say it was unusually interesting and satisfactory. The discussion was animated and intelligent, and the results sought, and to some extent accomplished, looked to the best interests of all the trade. As regards prices, the action of the association was moderate and conservative. Many things favor the belief that it will cost more to make stoves in 1881 than it did in 1880. Iron will cost more. Some think it will cost a great deal more, and that there is warrant for the belief that the course of the iron market will be full of surprises for the next six months. But whether iron is to experience another "boom" or not, all who make stoves are agreed that it will advance, rather than decline, as the season progresses. Other items of cost will probably show an increase greater in proportion than that of pig iron. Wages are already advancing. The demand of the molders for 15 per cent. increase of wages has been made and acceded to in St. Louis, Cincinnati, and Pittsburgh, and the union is boasting that the movement will sweep eastward to the Atlantic, successful at every point. The tendency of salaries and of the expenses of selling stoves is to advance rather than decline, and while the percentage of increase may not be great in any one item, it will considerably affect in the aggregate the net cost of stove production. We are by no means sure that the outlook is not such as to warrant an advance in selling prices; but there was evidently a conservative feeling in the association, and a disposition to give the dealer and consumer a fair share of the benefit of whatever doubt may exist in the minds of some as to the propriety of adopting a basis price higher than six cents. There was quite a strong feeling manifested, by perhaps a majority of the number present, in favor of increasing the price of odd plates ordered for repairs, and a plan was advocated for classifying inside pieces and face plates separately, charging a much higher price for the latter than for the former; but again conservative counsels prevailed and the price remained unchanged at eight cents. The action of the association with regard to hollow-ware was also reasonable. As buyers and jobbers, the association protested against a further reckless competition among those largely or exclusively engaged in this branch of manufacture, and recommended that the discount on hollow-ware should not exceed 50 per cent. This means just five cents per pound, net, to the dealer, which is certainly fair and reasonable, and will give the makers a satisfactory margin of profit.

With regard to terms of payment for stoves and hollow-ware, the association agreed to sell for cash in thirty days, or a note for four months. For settlements within ten days the discount is not to exceed 5 per cent.; 4 per cent. will be allowed for settlements within thirty days, and 1 per cent. per month thereafter. Five per cent. for cash in thirty days is certainly a high rate of interest for the manufacturer to pay for money, and so is one per cent. a month; but it should be a liberal inducement to the dealer to purchase for cash and to make this interest himself instead of paying it. The appointment of a committee to take steps looking to the organization of a grand national exhibition of stoves, &c., in the International Fair of 1883, is important, but it has present interest only for manufacturers who are members of the National Association.

Australia's Progress.

The holding of the exhibitions at Sydney and Melbourne has certainly been a stroke of good policy on the part of the people of Australia. Both have been well attended, that of Sydney being visited by no less than 848,633 people, and the foremost nations of the world have been well represented with their manufactures. Considering the distance, the interest shown in these exhibits by foreign nations is, therefore, sufficient proof of the importance attached to their welfare and progress. And, indeed, since the gold discoveries in 1853, Australia has made such extraordinary advances in every respect, that the statistics published on the occasion of these exhibitions, embracing the year 1879, deserve more than a passing notice.

We have extracted from these tables the items of greatest interest, and, adding thereto those relating to New Zealand, we are enabled to draw a comparison between Australia proper and the latter colony, both together constituting what is usually called Australasia. Although Australasia contains enormous mineral wealth, its principal resource has so far proved to be sheep raising, and as soon as the gold yield began to diminish, the people returned with vigor to their former almost exclusive, and at all events most prolific, source of wealth, the production of wool. In 1807, Sydney exported 245 pounds of wool; in 1820, 100,000; in 1830, 3,000,000;

in 1840, 7,000,000. In 1877, New South Wales alone shipped 102,150,000 pounds. In the latter colony the pasture devoted to sheep raising and wool growing occupied an area of over 183,000,000 acres in that year, while in 1848 only 41,700,000 acres were thus utilized.

But while the Australian Continent and Tasmania thus pushed this great industry to an unprecedented degree of development, the sister colony, New Zealand, favored by a soil and climate equally adapted to wool growing, displayed quite as much energy in the same direction. A few figures will show what has been accomplished in the way of wool exportation. We add thereto a table showing the stock of cattle, sheep, &c., and acres of land under cultivation.

The export of wool, in thousands of pounds, was as follows:

From	1876.	1877.
New South Wales.....	100,736	102,150
Victoria.....	106,266	98,468
South Australia.....	43,069	50,617
Queensland.....	22,918	23,981
Western Australia.....	8,531	3,093
Tasmania.....	6,849	8,016
New Zealand.....	59,854	64,481
Total.....	342,593	351,706

DECEMBER 31, 1879.

	Stock of cattle.	Sheep.	Acres land cultivated.
New South Wales.....	2,914,210	29,043,392	634,641
Victoria.....	1,129,358	8,551,773	1,682,275
South Australia.....	566,217	6,140,396	2,279,058
Queensland.....	280,633	6,665,034	101,052
Tasmania.....	129,091	1,834,441	156,184
Western Australia.....	60,617	1,109,860	65,428
Total.....	7,300,126	53,844,898	4,917,702
New Zealand.....	578,430	13,069,338	2,218,782
Total.....	7,878,556	66,914,236	7,136,484

The flourishing condition of Australasia has given a great impulse to its foreign trade, in which, as is but natural, England has the lion's share, as the following figures will show, although other nations begin to participate more and more in it, ourselves included.

IMPORT (PRECIOUS METALS INCLUDED).

Into	1876.	1877.	1879.
Australia.....	\$41,335,000	\$39,004,198	
New Zealand.....	6,073,080	8,374,582	
Total.....	\$47,408,080	\$47,378,780	

EXPORT (PRECIOUS METALS INCLUDED).

From	1876.	1877.	1879.
Australia.....	\$41,057,000	\$35,513,730	
New Zealand.....	6,327,000	5,743,126	
Total.....	\$47,384,000	\$41,256,856	

England's share in the import and export movements were:

Into	1876.	1877.	1879.
Australia.....	\$19,200,000		
New Zealand.....	4,116,000		
Total.....	\$23,316,000		

From	1876.	1877.	1879.
Australia.....	\$17,179,000		
New Zealand.....	5,321,000		
Total.....	\$22,500,000		

PRECIOUS METALS ALONE—IMPORT.

Australia and New Zealand.....	1876.	1877.
	\$2,419,000	\$2,045,000

EXPORT.

Australia and New Zealand.....	1876.	1877.
	\$2,212,000	\$10,248,000

New Zealand's imports increased considerably in 1879, on account of the extensive railway building which has been going on there of late years necessitating a large importation of material. The colony is now making great efforts to produce railroad material herself.

MILES OF RAILWAYS.

	Built.	Building.
	Dec. 31, 1877.	Dec. 31, 1879.
Australia.....	2,510	3,168
New Zealand.....	954	1,171
Total.....	3,464	4,339

MILES OF TELEGRAPH.

	In operation.	Being laid.
	Dec. 31, 1877.	Dec. 31, 1879.
Australia.....	20,373	23,237
New Zealand.....	3,397	3,065
Total.....	23,770	26,302

The financial position of the colonies in 1879 is shown in the following table:

	New Zealand.	Victoria.	South Australia.	Queensland.	Western Australia.	Tasmania.	Total public debt.	Public debt per capita.	Total revenue.	Tax per capita.
Total.....	\$17,604,183	\$3,937,872	\$4,037,410	\$1,030,713	\$1,030,713	\$1,030,713	\$23,682,594	\$12.13	\$1,030,713	\$1.13
	\$17,604,183	\$3,937,872	\$4,037,410	\$1,030,713	\$1,030,713	\$1,030,713	\$23,682,594	\$12.13	\$1,030,713	\$1.13

Considering the comparatively small population, it will be seen that the public debt is large, but as it represents to a considerable extent solid railway property and is counterbalanced by a large revenue, it appears in a light very much different from the indebtedness contracted by other nations less prosperous, less active and less capable of paying heavy taxes.

With such varied and almost unlimited elements of prosperity, Australia would attract a much larger immigration than it does if the country were not situated at the antipodes, at an enormous distance from Europe, whence the most desirable settlers could be obtained. The increase of population is, therefore, derived as much from an

excess of births over deaths as from new comers.

The ensuing figures show the extent of the country and increase of population during the past few years:

Area.	Square miles.	Dec. 31, '77.	Dec. 31, '79.
Australia.....	2,474,041	2,097,883	2,811,055
N. Zealand.....	105,322	417,622	448,124
Total.....	2,580,283	2,515,511	3,259,779

To the above population there have to be added the aborigines, counting on December 31, 1876, 101,213 souls.

The movement of immigration and emigration has been in Australia and New Zealand:

	1876.	1877.
Immigration.....	131,805	130,793
Emigration.....	83,808	90,348
Increase under this head..	49,917	40,445
Births.....	85,429	86,049
Deaths.....	38,788	36,409
Increase under this head..	46,641	50,240

The gain in population during the years 1878 and 1879 having been, as above shown, together, 144,260, it may be fairly assumed that the population increases at the rate of about 75,000 to 100,000 annually.

On comparing what has been accomplished in New Zealand with the progress in Australia proper, it will be noticed that the former advances as rapidly, and even more so in some items. The fact is that New Zealand is a newer country, and that much has to be done there which Australia has long possessed. But while thus advancing, it would be deplorable if New Zealand should go on destroying her splendid forests at the rate she has been doing of late years. This reckless destruction of valuable gum and other trees has attracted much attention both at home and abroad, and it is to be hoped that measures will be taken to diminish it and compensate for it by replanting. The mineral resources of Australasia develop normally, and will continue to form one of its chief fountains of prosperity; the same thing may be said of wheat, barley and other cereals, the production of which steadily increases. Manufacturing so far has been chiefly fostered in Victoria.

The Dominion Ministers submitted their budget on the 18th inst., and pointed with satisfaction to the revenues of the present year as an indication of the national policy. Sir S. L. Tilley affirmed that the most sanguine expectations of the government have been realized, and that the tariff was ample for all the purposes of the country. He believed it to be quite clear that the increase of the current year will be at least \$27,586,000, against the estimate of \$25,517 for last year. In several branches of manufacture there is a decided increase. Locomotives and other rolling stock are being manufactured largely in the Dominion, as at Cobourg and London. So, too, of hardware, including stoves, shovels and hoes, which have received a new impetus. This sounds very well, but when we come to examine the statistics we find that, starting with next to nothing, a very little actual business represents an enormous percentage of increase.

Late advices received from Natal, by a responsible house in Boston, represent that a deplorable state of affairs exists there, arising from the cessation of trade and the glut of American goods, entire cargoes being offered at less than invoice cost. The report that a company had been formed in the Transvaal to do a direct business with America, is spoken of as a swindling device to attract shipments of goods. The correspondent referred to warns those who may have contemplated making shipments while the war lasts, not to expect any satisfactory returns.

Advices from the City of Mexico to February 16th, via Havana, bring a report that Messrs. Palmer & Sullivan propose to construct a narrow-gauge railroad from the Capital to Vera Cruz without subvention, and it is intimated that the government disapproves of this sort of competition with existing roads. Stories of this sort are to be expected, for Europeans in Mexico must regard with intense disgust the advances making in that country by their American rivals.

British Exports.—The English are congratulating themselves, and with reason, on the reports just published of their foreign trade. There is an increase in almost every article of export or import. In cotton goods the augmentation of exports amounts to \$11,790,000, while iron and its cognate industries have an aggregate increase of \$11,363,000. The English press call special attention to the fact of the increase in the exportation of sugar, especially of the higher grades. They also urge the attention of British manufacturers to another fact, and one with a more depressing significance—i. e., the large increase in the importation of American woolen and cotton goods, begging them to consider carefully the cause of the success of our fabrics. The demand for English cotton goods has decreased greatly in China and India during the last five years, while our manufactures have been taking their place. The increase in the total exports from Great Britain over those of the preceding year was \$156,395,000, surpassing the increase in our exports in the same period by \$31,050,000. It must be remembered, however, that our foreign trade in manufactured articles is but of comparatively recent growth, while that of Great Britain has been the work literally of centuries. Her increase of exports in the last year, too, is largely due to the improved harvests over those of 1879. For our further encouragement, it is worth while to remember that Great Britain is forced to import

all her cottons, sugars, oils, and much of her iron before she manufactures them; hence her real gain is only the difference in price between the raw and manufactured article, while we derive the entire profit from the product, from the raw ore and cotton on to the polished steel or delicate fabric which we offer in English markets.

WASHINGTON NOTES.

(From Our Own Correspondent.)

WASHINGTON, D. C., February 23, 1881.

There seems to be a movement among some of the Democratic leaders to force an extra session, without reference to the effect which it may have upon the business of the country, and particularly upon its industries. The old rivalry between Mr. Blackburn, of Kentucky, and Speaker Randall has broken out afresh. The struggle now is for the Democratic leadership on the floor when that party returns to a minority in that body in the next Congress, and both are encouraging themselves with the idea that their chances would be better if a session were rendered necessary early after March 4th. The friends of Representative Hisecock, of New York, have become unusually active of late in pressing his claims for the Speakership. They are making a terrible commotion, and are resorting to that ancient method of persuasion which appeals to the stomach as the best way of reaching the heart. On Monday a second dinner was given to the aspiring New Yorker, at which an entire change of programme, as regards guests, was carried out. Nothing was said of the Speakership, so that the unsophisticated Representatives-elect filled themselves up with viands and wines without being aware of the scheme which lay beneath all this festivity. Speaker Randall is said to favor Mr. Hisecock's candidacy as far as a Democratic Speaker can—that is, by good wishes and a word or two in the right place. The Speaker would like a place on the Appropriation Committee, and so would Mr. Blackburn. A few weeks ago Mr. Kasson was the favorite. It is now extremely doubtful if he will make any showing at all. The tariff Republicans are inclined to favor Mr. Hisecock.

HOOP IRON.

Since the failure of the hoop iron men to secure redress at the hands of the Treasury Department, an effort has been made by Representative McKinley, of the Committee on Ways and Means, to secure some legislation explanatory of section 2504 of the Revised Statutes. There is hardly a probability, however, that any legislation on the subject can be reached during the few remaining days of this session, but it will certainly give it a status in the next. The original measure by Mr. Townsend, of Ohio, provided that the paragraph of section 2505 of the Revised Statutes which reads as follows: "Manufactures, articles, vessels, and wares, not otherwise provided for, of brass, iron, lead, pewter, and tin, or other metal (except gold, silver, platinum, copper, steel), or of which either of these metals shall be the component material of chief value, 35 per cent. ad valorem," be, and the same is hereby, amended by adding thereto the following proviso:

"Provided, That whenever any such manufactures, articles, vessels, or wares at said 35 per cent. ad valorem would pay less duty than is by this section imposed on the materials of chief value entering into the same in the form it had last before entering into such manufacture, article, vessel, or ware, then such manufacture, article, vessel, or ware shall pay the same duty which by this section is imposed upon the said material of chief value in said last form."

The McKinley substitute, which is practically a paraphrase of the above, was adopted by a vote of 6 to 5. The Republicans in favor of it were Kelley, of Pennsylvania; Conger, of Michigan; Frye, of Maine; Dunnell, of Minnesota; and McKinley, of Ohio. Phelps, of Connecticut, was the only Democrat voting for it. Tucker, of Virginia; Morrison, of Illinois; Carlisle, of Kentucky; Mills, of Texas; and Felton, of Georgia, all Democrats, voted against it. This substitute provides that the paragraph of section 2504 of the revised statutes, which reads as follows: "Manufactures, articles, vessels and wares, not otherwise provided for, of brass, iron, lead, pewter and tin, or other metal (except gold, silver, platinum, copper, steel), or of which either of these metals shall be the component material of chief value, 35 per cent. ad valorem," be, and the same is hereby, amended by adding thereto the following proviso:

"Provided, That in no case shall the duty on any manufactured article be less than the duty upon the material of chief value from which it is manufactured."

Mr. McKinley, from the Committee on Ways and Means, also submitted a report of the views of the committee, which very clearly explains the propriety of the substitute and shows that it is in accordance with the precedents of Congressional legislation since 1816.

The Telegraph Consolidation.—The Compagnie Française du Telegraphe à Paris et New York, commonly known as the French Cable Company, have taken a step similar to that of the United States Direct Cable Company, who obtained an injunction against the Atlantic and Pacific and the Western Union companies, to prevent the carrying out of some of the provisions of the consolidation agreement, on the ground that they will interfere with contracts between the Atlantic and Pacific and the Direct Cable Company. The French Cable Company have a contract with the American Union Company for the exclusive use of their cables in all the transatlantic telegraph business in connection with the American Union, just as the Atlantic and Pacific Company have guaranteed to send all their cable business by the Direct Company. Both of these contracts, it is said, will be impaired by the consolidation, inasmuch as the two merged companies virtually, if not nominally, pass out of existence. The Atlantic and Pacific has already made this claim in the United States courts and been granted a judicial order of injunction pending investigation.

* Our correspondent sends the text of the report, but it is unavoidably omitted from this issue, owing to the crowded condition of our columns.

AMERICAN INSTITUTE OF MINING ENGINEERS.

PHILADELPHIA MEETING.

Promptly at 9 a. m., Wednesday, February 16, the members started in a special train from the Callowhill street depot of the Philadelphia and Reading Railroad, and in a short time reached the first point of interest to be visited.

THE PENCOYD IRON WORKS.

The erection of the Pencoyd Iron Works was commenced in the year 1852, by Alger non Roberts and Percival Roberts, with a view to entering into the manufacture of heavy hardware; but this intention was never thoroughly carried out, being limited to the forging of a few solid wrought-iron anvils, in molds, under a trip-hammer. During the progress of their examination of machinery necessary for the business, it occurred to them to add to their line of manufacture hammered car and locomotive axles, as the railroad interest at that time was increasing very rapidly. Their first order (for 12 axles) was received from the well-known car-wheel manufacturers, Messrs. A. Whitney & Sons. The growth of this branch of business was rapid, and, in the year 1855, they added to it the manufacture of rolled scrap axles. The product increased annually until the year 1872, in which 45,390 rolled and hammered axles were made. At the close of the year 1880, a total number of 467,026 axles of both kinds had been reached. In the year 1859, under the title of the "Bridge Company," they commenced the manufacture and erection of wrought and cast-iron bridges; having secured the services of Mr. John W. Murphy as engineer. It was the only firm at that time engaged in the manufacture of iron bridges. Squire Whipple, of New York (who preceded them in designing and erecting a number of his patent bridges, known as the Whipple truss), subsequently sold the exclusive right to use his patents to the above association. A large number of bridges were erected on Beal's wagon road for the United States government; also, in 1859, an iron span was built across the Delaware River, at Easton, for the Lehigh Valley Railroad Company; one for the Illinois Central Railroad Company, and several for the city of Philadelphia.

The name "Pencoyd" is of Welsh origin, and signifies "tree tops;" the Roberts homestead (settled in 1683, by grant from William Penn) being so called. It is located but a short distance from the works and still remains in the family, being occupied as a country seat by Mr. George B. Roberts, President of the Pennsylvania Railroad.

The plant consists of the finishing mills the forge, the puddle mill and a series of auxiliary structures. The finishing mills contain, at present, the following: One 23-inch three-high roll train, driven by a 32 x 48-inch vertical engine, with a 25-foot fly wheel weighing 70,000 pounds. Upon this train, rounds up to 7 inches diameter and large shapes are rolled. Among the latter, 15-inch channels and 6 x 6 inch angles may be mentioned as worthy of note. These mills are supplied by three heating furnaces of ordinary type. There is besides one 18-inch two-high roll train, for bar iron, axles and shapes of medium size, driven by a 19 x 48-inch horizontal engine. Three heating furnaces are attached to this roll train, and the mill has also one 12-inch three-high roll train, for guide iron, small bars and shapes, driven by an 18 x 22-inch horizontal engine and supplied by two heating furnaces. The forge, designed especially for the manufacture of car and locomotive axles, contains one steam hammer, built by Merrick & Sons, of the following dimensions: Weight of ram, 3000 pounds; diameter of cylinder, 16 inches; length of stroke, 36 inches; one steam hammer, built by Bement & Dougherty, weight of ram, 3000 pounds; diameter of cylinder, 14½ inches; length of stroke, 30 inches; also, one 2500 pound steam hammer and one 1000 pound hammer, at present not in use. The puddle mill contains 12 double furnaces; two sets of 20½-inch three-high rolls, driven by a 24 x 36-inch vertical Corliss engine, and one rotary squeezer, driven by a 16 x 24-inch vertical engine. It is at present undergoing alterations, which, when completed, will greatly change its character. The scrap house contains one shears, driven by a 20 x 20 inch engine, capable of shearing, at one stroke, a plate 10 feet 6 inches long by 2 inches thick; two rammers for cleaning scrap; and two shears for cutting scrap. The machine shop is equipped for handling axles and the general repairs of the works. Besides the special axle tools, it contains two roll lathes, one 36-inch screw cutting lathe, several engine lathes, one 50 x 50-inch planer, one 25 x 25-inch planer, a shaping machine, drill presses, &c. The pump house contains two Worthington duplex pumps; also, one duplex pump, built by Philadelphia Hydraulic Works. The total pumping capacity is 1500 gallons per minute. Steam is furnished by 26 boilers, placed over heating and puddling furnaces, and also by two large flue boilers. The works are lighted by electric lamps of the Thomson-Houston patent.

The products of the works are: Hammered and rolled axles; shafting, from ½ inch to 7 inches diameter; squares, from ½ inch to 4 inches; flats, from 1 inch to 12 inches; channels, from 2 inches to 15 inches; angles, from 1 inch to 6 inches; tees, from 1 inch to 4 inches; beams, from 4 inches to 10 inches. Particular attention is given to the manufacture of iron of high quality for special purposes, such as bridge tension members, boiler stays, and all other work for which guaranteed material is required.

Among the more important structures composed of Pencoyd iron may be mentioned: Memorial Hall; Ma'n Centennial Exhibition Building; the Rockville Bridge, crossing the Susquehanna River on the line of the Pennsylvania Railroad at Harrisburg; the Kentucky River Bridge, Cincinnati Southern Railroad; New York Elevated Railroad; bridge crossing the Platte at Fort Steele, on the line of the Union Pacific

Railroad; bridge crossing the Lehigh River at White Haven, on the line of the Lehigh Valley Railroad; Filbert Street Bridge and approaches, at Philadelphia, on the line of the Pennsylvania Railroad Elevated Extension. The total annual capacity of the Pencoyd Iron Works is about 18,000 gross tons.

A short ride brought the members to the Midvale Steel Works, at Nicetown, at which the operation of forging and rolling tires and steel shapes, together with the working of the open-hearth furnaces, was witnessed by the members. We are indebted to Mr. Marriott C. Smyth, secretary, and Charles Brinley, manager of the works, for the following description of

THE MIDVALE STEEL WORKS.

The establishment lies midway between the Delaware and Schuylkill rivers, in the line of a depression which crosses the divide between the two streams. This depression was taken advantage of by the Philadelphia and Reading Railroad Company as a convenient route for a connection between their main line and the Delaware water front. The Midvale works are, therefore, well placed in regard to supplies of coal from the Schuylkill Valley, and of material of all kinds landed on the Delaware wharves. Junction lines in the immediate vicinity give further connections with the Pennsylvania, the Northern Pennsylvania and the Lehigh Valley Railroads, and with the Bound Brook route to New York.

In 1866, Wm. Butcher and others started a steel works on the site occupied by the plant of the present Midvale Company. After the vicissitudes growing out of an attempt to establish an industry which at that time was almost altogether dependent upon skilled labor, in a country where workmen of the kind required were not abundant, the place came under the control of another management, and starting again from small beginnings, has grown during the past eight years as rapidly as was consistent with the training of an intelligent staff of employees and the state of trade. The works occupy about seven acres of ground. The buildings include crucible and open-hearth melting shops, a forge, tire mill, rolling mill, boiler house, molding and annealing shops, as well as others for finishing, repair work, stoves, &c. The crucible melting department contains 14 coal melting fires, with capacity of 52 pots; five Siemens furnaces, with capacity of 30 pots; one Siemens muffle for pre-heating pots, and four gas producers for anthracite coal. This shop has an annual capacity of 4000 tons. There are two open-hearth melting furnaces, one of which has a peculiar construction of the hearth. The furnaces have a capacity of 11,000 tons per annum. The forge contains six of William Sellers & Co.'s double acting steam hammers, from 15,000 pounds weight down to 1000 pounds. The fire rolling mill is a horizontal mill, built by W. J. Galloway & Sons, Manchester, in 1866, and is driven by an engine built by the same firm, with twin cylinders, 26½ inches in diameter, 36 inches stroke. It is equipped with an hydraulic crane and every convenience for turning out accurately all standard sections of locomotive and car-wheel tires. The rolling mill is a fine brick building, 152 x 133 feet—25 feet 3 inches to the eaves, and 47 feet 9 inches to the top of the ventilator. Under this roof are two trains of rolls, a 23-inch train and a 12-inch train, both built by James Moore. Two large Siemens heating furnaces, a saw by Wm. Sellers & Co., straightening machine, shears, &c. On the finishing side of the 23-inch train is a carriage 49 feet 2 inches by 2 feet 2 inches wide, carrying a line of rollers. This carriage runs by power on light rails in the floor, and moves easily opposite any pass. When at the finishing pass it is in line with other driven rollers carrying to the saw and the straightening plate beyond. From the latter the bars are moved along the hot-bed on to skids, from which they can pass directly to cars for shipment. This train is driven by a 32-inch cylinder engine, 60-inch stroke, made by James Moore. The boiler house is placed between the forge and rolling mill, and contains 26 boilers in five sets, aggregating about 550 nominal horse power.

The first contract of importance undertaken by the present management, was for 3000 tons of blooms for the Pennsylvania and Reading Railroad Company, to roll into rails at their mill at Reading. Into these blooms went most of the scrap left on the ground by the old Wm. Butcher Steel Works. The manufacture of crucible steel was begun at about this time, and has grown to meet the requirements of a considerable trade. Shortly afterward the company began making steel axles and tires. We believe that the first lot of American axles accepted by the Pennsylvania Railroad, as answering their requirements, were made at these works; also the first tires of open-hearth steel were made there. It was found that by melting in the open-hearth furnace stock of the same purity as that used for the best crucible steel, a material was obtained better for tires than crucible steel, because more uniform and equally good in all other respects. Among the other products are spring, machinery, gun barrel, and, in fact, all sorts of bar steel; forgings of all kinds and large castings. Forging for gun tubes 73 inches in diameter and 12 feet long have been successfully made, the tubes as tested answering all the requirements of the Navy Department. Castings up to 10,000 pounds weight, such as hydraulic cylinders, have been made so successfully as to bore without showing imperfections.

The Midvale Co. are now working under a contract to roll for the Edge Moor Iron Co. the shapes and bars for the suspended structure of the New York and Brooklyn Bridge. The shapes include steel channels, angles and I-beams, all rolled from blooms of rectangular section. As far as known, this has not been accomplished before—certainly not in America. The methods of steel-making employed are limited to those possible in the crucible and open-hearth furnace. No comment is necessary upon the crucible melting, except to state that a preference is still shown for the old English plan of using cemented bars for the highest grades of steel. At the open hearth furnaces no one process is exclusively adhered to. According to the particular grade of steel to be made and a variety of circumstances, such as the composition of material

used, condition of the furnace, &c., either the pig and bloom, pig and ore, or a mixed process is adopted. One principle, however, is never lost sight of, namely, to know with accuracy the facts as to the composition of all the material melted and produced, the analyses of the products being supplemented by constant reference to the testing machine. It has been the aim of the management from the first to use every endeavor to find out what is the best steel for each particular purpose and make it at any cost. The maximum melting capacity of the works is 15,000 tons per annum, 425 hands being employed.

Returning to the train the members resumed their journey, and, after changing cars, proceeded to Malvern. On the way an elaborate luncheon, spread in one of the cars, was discussed, full justice being done to the good things offered. At Malvern a number of the party—among them your correspondent—mounted two country hay wagons which stood in readiness for them, and were mercifully jostled across three miles of bad road to Sugartown, where Bishop's platinum works were visited. Mr. J. Bishop, whose manufactures of platinum vessels for laboratory use won very favorable mention at the Centennial Exhibition, melted a lot of platinum in the presence of the members, and elicited exclamations of surprise at the simplicity and efficiency of his apparatus. He conducts five jets of oxygen and hydrogen, under a pressure of about 14 pounds, through five small copper nozzles, upon the material to be melted. A few ounces of platinum scrap were simply put upon a hollowed piece of fire-brick laid in an iron frying-pan, and in two minutes the entire quantity was melted. He informs us that he has melted as much as 250 ounces at one time.

Returning to Malvern the party met the train, which had meanwhile proceeded to Downingtown, where the improvements made by the Pennsylvania Railroad were inspected. The members were taken back to Philadelphia, and had the honor of being the first party carried over the elevated railroad and viaduct which is to transfer the terminus of that railroad to the very heart of the city. We shall take an early opportunity to present to our readers a more detailed account of this huge work, which reflects great credit upon the enterprise and ability of the managers and engineers of the Pennsylvania Railroad.

The Second Session

was held in the afternoon in the hall of the American Philosophical Society, the first paper, on the "Construction of Geological Cross Sections," being read by H. M. Chance, of Philadelphia. This was followed by one on a kindred subject, "A New Method of Mapping the Anthracite Coal Fields of Pennsylvania," by C. A. Ashburner, of Philadelphia. The object of the new method devised by Prof. Lesley was to construct from known data, such as mine surveys, and by inference from the observed structure of the rocks under ground, grade curves, which serve to afford a much closer approximation of the area of coal beds than the system of estimating from the superficial area. Mr. Ashburner gave a series of figures illustrating the considerable differences in the amounts of coal returned by both methods, and showed drawings made in accordance with the new plan.

Mr. Charles M. Morgan, of Worcester, Mass., then read a paper

ON THE USE OF COMMON SALT IN THE PROCESS OF DRAWING WIRE,

from which we take the following:

It is a well-known fact to those skilled in the art that, to succeed in drawing iron or steel wire, it is of the utmost importance to have thorough lubrication, as a lack of it would cause abrasion of the wire, or of the walls of the tapering hole in the "die" or "plate," and quickly put an end to the operation.

In drawing coarse or large sizes of wire—say, 2 inch diameter—the pressure upon the sides of the tapering hole where the wire comes in contact is so great that any ordinary lubricant would be squeezed out when the ordinary reductions in size are made, and abrasion would take place. In order to meet this difficulty and secure proper lubrication, it has been common practice for years to apply a paste made of rye or wheat flour or lime to the surface of the wire to be drawn, and when the paste was dry, to smear the wire with tallow or grease when it was ready to be drawn, the dried paste serving to prevent the lubricant from being pressed out in the process.

Some years since, when Bessemer metal came largely into use as material for wire, Mr. Morgan found that its drawing required so much more power than iron wire, that he was led to institute a series of trials to ascertain the difference in power required, when it was found that Bessemer wire required from 100 to 200 per cent. more power to make the same reduction in sizes than soft iron wire, depending upon the amount of carbon and other chemical constituents.

The following table shows the power required to draw (I) soft Swedish iron, (II) American Bessemer steel and (III) American crucible steel:

	I.	II.	III.
Diameter of wire before drawing, inch.....	0.224	0.226	0.224
Diameter after drawing, inch.....	0.101	0.107	0.109
Area before drawing, sq. in.....	0.286	0.401	0.394
Area after drawing, sq. in.....	0.273	0.361	0.286
Reduction, per cent.....	27.3	24.9	26.6
Length of taper of wire in die.....	0.25	0.29	0.24
Power to draw wire, lbs.....	1,050	3,054	3,450
Pressure against tapered surface of iron, lbs.....	17,088	61,080	73,312
Pressure on tapered surface, lbs. per sq. in.....	68,349	316,310	331,500
Carbon.....	0.45	0.45	0.45
Phosphorus.....	0.034	0.144	0.114
Sulphur.....	0.016	0.032	0.025
Silicon.....	0.018	0.028	0.020
Manganese.....	0.020	1.04	0.461

The failure of the coatings in common use in drawing Bessemer wire led to the inquiry, Is there not some coating that will endure this increased pressure? and trials were made at the works of the Washburn & Moen Manufacturing Company, at Worcester, Mass., to ascertain if something could not be found that, in combination with the flour or lime paste, would make them cling with sufficient tenacity. Early in 1875, when

two young men had been making some discouraging trials of various substances to modify the lime coating, one of the young men said to the other, "If I wanted to make whitewash stick, I would put some salt in it; let us try it." Whereupon salt was used and found to make the whitewash stick, but it was also found that unless it was quickly dried on the wire and kept dry, the wire would be corroded with rust. Soon after it occurred to the writer to use a hot solution of lime and salt, and it was found that, by using it at a boiling temperature, when wire was taken from such a bath the water was quickly thrown off, and it was only necessary to keep it in a warm, dry place till the wire was drawn. Salt coating, whether combined with lime or otherwise, has been found to resist any pressure that steel wire of the highest tensile strength makes upon the inner surface of the die when being drawn.

Mr. Morgan found that with a salt coating as a lubricant the power required in wire drawing was very materially reduced, and that it was still operative even after 6 to 8 passes. Messrs. Chas. O. Thompson, of Worcester, Mass., and Dr. T. M. Drown, of Easton, Pa., then read a paper on the same subject, in which the theory of the improved method was entered upon at length. We shall take occasion to give a full abstract of it at an early date. The session was closed by two papers read by Mr. S. A. Ford, of the Edgar Thomson Steel Company, on a new method for the estimation of manganese in spiegeles, irons and steels, and on the amount of manganese required to remove the oxygen from iron after it has been blown in the Bessemer converter. Both are of importance and will be published in full. The former led to some discussion, in which instances were cited by Mr. Kent of the uncertainty and inaccuracy of present methods of estimating manganese in steel. We understand that prominent chemists have tested Mr. Ford's new method, and have fully indorsed the conclusions reached by him.

THE MUSICAL RECEPTION

tendered in the evening by the Philadelphia members to the Institute at the Academy of Fine Arts, was a brilliant success, many prominent citizens of Philadelphia, with their ladies, having accepted the invitation to meet the members of the Institute. The rooms of the Academy were beautifully decorated with flowers and brilliantly lighted, thus affording an excellent opportunity to examine the large collection of paintings and statuary which the institution possesses. A collation was served in one of the lower halls, a feature of which was a number of models in ice, of a Bessemer converter, a mine wagon and a blast furnace.

(To be continued.)

INDUSTRIAL ITEMS.

MAINE.

O. P. Mason's hardware store and Charles Mason's dry-goods store, at Bethel, were burned on the morning of the 18th. Total loss, \$10,000. O. P. Mason was insured for \$4500, and Charles for \$3800.

The Bath Iron Works report business good. They are engaged on a large order of machinery for a shipyard at Puget Sound.

The Portland Company, Portland, are building a 6 x 12 feet beam engine for the International Steamship Company, of Portland.

The Lewiston Machine Company are improving their shop somewhat by adding new tools and machinery. They have just finished a large amount of cotton machinery.

VERMONT.

The Vermont Snath Company, Springfield, are now employing nearly 50 men on snaths and cradles.

Osgood & Barker, machinists, of Bellows Falls, now occupy the Vermont Farm Machine Company's building. They are mostly engaged in paper machinery, and have built new patent cones for the Jordan engine.

MASSACHUSETTS.

A nut that is reliable has a value beyond computation. The "Atwood Safety Nut" appears to possess this quality, for after a test of several years on the Boston and Albany Railroad it has never proved treacherous. Applied to the car trucks as long ago as 1875, nuts of this description, up to the present date, have never needed tightening, nor have they ever failed in their work. These nuts put on the track have proved no less efficient; and the confidence felt in them is so implicit that the safety nut is being put on all the engines, cars and trucks of the Boston and Albany Railroad. High commendations also come from the New York Central and Hudson River Railroad Company and other sources. They are made by the Atwood Safety Nut Company, of Springfield.

The Douglas Ax Company are making over 2000 chopping axes a day at their works at East Douglas.

The spoon and fork department at Reed & Barton's works, at Taunton, is running night and day. Work will probably begin in the new building in about a month.

The Mason Machine Works, at Taunton, now employ 800 men, and are short handed at that.

R. A. Ripley is now located at 144 Blackstone street, Boston, where he is better enabled to meet the demand for light supplies for railroads, steamboats and mills, and, besides, has greatly increased facilities for the manufacture of his sheet-metal specialties.—*Boston Commercial Bulletin.*

The Pocasset Mfg. Co., of Fall River, have just erected an iron smoke-stack west of their mills, which weighs a little over 15 tons independent of the plate on which it stands. It is 125 feet in height, and measures 6½ feet in diameter. It was manufactured for the company by Pitkin Bros., of Hartford, Conn.

The Deane Steam Pump Company, of Holyoke, are so pressed with special work that they are running well into the night, using steam for power part of the time.

Among other orders on the books of the Whitinsville Spinning Ring Company, Whitinsville, is one for 15,000 twistlers for the Coates Thread Company, Paisley, Scotland.

The Snell Mfg. Co., Fiskdale, have recently adopted the plan of making their bits entirely of steel. E. L. Bates, formerly agent, has been elected treasurer, and Rufus E. Bond made agent.

RHODE ISLAND.

A new grate bar, invented by an Englishman by the name of Newton, is being manufactured at Providence. This bar is said to do away with many objections and to be perfectly adapted to the use of all sizes of coal. It is said to be very durable and to expand and contract without injury. It may be replaced, one bar at a time, without dumping the fire. It should also be mentioned that by the new arrangement the fire may be thoroughly renovated or shaken by a lever. The same inventor has a steam trap, which may be used to a certain extent as a steam pump.

CONNECTICUT.

The new factory for the Hartford Machine Screw Company is so near completed that one of the large buildings is already occupied by the screw machines. By the 1st of April, it is expected, the new factory will be running at its full capacity.

The bicycle department of the Weed Company's works at Hartford has been driven throughout the winter in preparing for spring trade, which is expected to be even greater than last year.

The Yale Lock Company, of Stamford, have voted to increase their capital stock and add to their buildings. Their pay roll is \$150,000 a year.

The Coe Brass Company, of Wolcottville, have during the past year been adding to their facilities for turning out work by erecting large rolling and wire mills.

A joint stock company with a capital of \$30,000, has been formed in Southington for the manufacture of bright hardware and brass work.

The Wyoming Pin Company, Winsted, are rebuilding the portion of their factory recently injured by fire, and work will probably be resumed by the 1st of April.

Southington is to have a new manufacturing company, the Etna Hardware Company, a joint stock corporation with a capital of \$30,000, and which will make all kinds of eyelets and hardware articles of brass, iron, steel, &c.

The Jewell Pin Company, Hartford, has been incorporated and the manufactory will soon be in full operation.

Warner & Allen, Norwich, have invented and put upon the market a machine for pressing harness loops.

The capital stock of the Russell & Erwin Manufacturing Company, New Britain, has been doubled by a vote of the stockholders, and is now \$1,000,000. The business of the company during the last year has been excellent.

The present occupied shops of the Pratt & Whitney Company, Hartford, have an area of floor of nearly 50,000 square feet. Adding the recent extension of the foundry and the new extension, nearly ready for occupancy, and this area will be nearly doubled.

NEW YORK.

Johnson Livingstone, William E. Dodge and others, on Monday, filed articles of incorporation as trustees of the American Heating Power Company, with a capital of \$6,000,000. The company is to supply hot air or steam for motive power and other purposes in New York.

The contract for building three wrought-iron bridges over the Erie and Champlain canals, at Beckers, Fort Ann and Bemis Heights was awarded to Melvin A. Nash, of Fort Edward.

The jury to inquire into the cause of the recent accident at the New York Central depot, in Buffalo, find that the roof fell in consequence of the parting of the iron cords which held the trusses of the roof in position; that said cords were broken from cause or causes unknown to the jurors.

Two vertical boilers and a horizontal Phoenix steam engine, having a cylinder 10 inches diameter by 12 inches stroke, have just been furnished to Hartley & Graham, Fourteenth street, by E. P. Hampson, 91 Liberty street, New York.

The Holly Manufacturing Company, of Lockport, have completed two upright compound condensing pumping engines for the city of Evansville, Ind., of 4,000,000 gallons each, daily capacity.

J. H. Blaisdell, of 107 Liberty street, is introducing a number of wood-working machines that have valuable improvements.

Tennant & Hattersley have introduced a patent metallic steam packing that can be used in all places where steam and water are used and stuffing boxes are required. They have also introduced a metallic joint metal for steam and water. Their works are at 79 to 85 First street, between South Eighth and Ninth streets, Brooklyn, E. D.

The sectional air-space covering, manufactured by the Raymond Manufacturing Company, 642 West Fifty-second street, New York, has been applied in manufactories, mills, refineries, paper mills, breweries, chemical works, public and private buildings.

NEW JERSEY.

The work of the machine shop at Smithville, Burlington County, is now done by contract, the various departments being assigned to different foremen at stated amounts.

It is stated that the Messrs. Dupont, of Wilmington, Del., have bought the Delaware River Railroad, between Woodbury and Pennsboro, and propose to put it in first-class condition.

PENNSYLVANIA.

Mr. John F. Stauffer has bought out the business formerly carried on by Mr. Ezra F. Landis, at Lancaster. Mr. Stauffer will continue the manufacture of fan blowers, Scandinavian jail locks and machinery in general; will also make estimates on new goods.

Thorne, De Haven & Co., of Philadelphia, have recently had orders from California for their drilling machines. Their shops are full of work and prospects encouraging.

Four hundred and fifty-two tons of pig iron were manufactured at the furnace of the Warwick Iron Company for the week ending Saturday, February 12.

(Continued on page 19.)

IMPROVED PIPE FITTERS' VISE.



STRONG,
LIGHT,
EFFICIENT,
CHEAP.

PRICE, \$8.00.

To meet the requirements of the large number of persons who have use for such an article, we invite attention to our Improved Pipe Vise. This Vise can be used either as a permanent fixture to work-bench, attached to angle plate or can (unlike others) be held between the jaws of any Smith's or Blacksmith's Vise; the movable jaw being OPEN ON SIDE permits work to be gripped at any desired point without slipping. Wrought iron, and the remainder of solid steel throughout. The Steel Gripping Jaws can be duplicated and replaced at any time when worn out. It is a very convenient tool, well adapted to the wants of Plumbers, Pump Fitters, Well Drivers, and all who have use for a tool that is strong, light, efficient and cheap, which can be readily carried about with kit of tools.

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Grocers', Druggists' and Spice Mills' Tin Ware a Specialty.

Also, A LARGE LINE OF MISCELLANEOUS HOUSE FURNISHING HARDWARE.

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Special discounts to the trade. Correspondence solicited.

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Manufacturers,



164 Fulton St.,

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Torrey's Patent

COG WHEEL



Ice Cream Freezers.

Torrey's Door Springs.

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Patented July 24, 1880.

The engraving shows that the "Ideal" is the most perfect, simple and complete pot ever produced, and as such is the best selling pot in the market. It sells on its own merits. By its use the coffee is always regular, of the same quality, strength, and perfectly clear. A child can make better coffee in this pot than can an adult by the old method of boiling. It is without doubt the best pot in the world to day, and you can sell them. They are used and recommended by Mrs. President Hayes, Mrs. Bishop Simpson, Hon. John Jay, Gen. B. Flint, California, and by everybody who has used one.

Prices: Polished Tin, per doz. 3 pt., \$1.50; 5 pt., \$2.00; 7 pt., \$2.50; 9 pt., \$3.00. Nickel Silver, 3 pt., \$1.50; 5 pt., \$2.00; 7 pt., \$2.50; 9 pt., \$3.00. The nickel silver pots are nickel-plated outside and silver-plated inside. They are very handsome. Discount 25 per cent. Send for circular or 50 cents for a 5-pint sample pot.

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Lyon's Patent Metallic
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Also, Manufacturer of

BRUSHES

Of Every Description,

Nos. 17 & 19 Green St.,

Albany, N. Y., Dec. 8, 1880.

To All Whom it May Concern:

To-day a decree in my suit against G. T. Fisher & Co., of Detroit, for an
infringement of my patent, was made and entered, of which the following is an extract:

At a session of the Circuit Court of the United States for the Eastern District of Michigan, held at Detroit,
&c., on Wednesday, the 8th day of December, 1880.

NELSON LYON
Plaintiff,
GUYON T. FISHER, et al.,
Defendants.

It is ordered, adjudged and decreed, that the act entitled "An act for the relief of Nelson Lyon and Jer-

miah S. James," passed by Congress and approved April 1, 1880, &c., is a good, valid and constitutional act.

That the original patent, bearing date July 9, 1872, and numbered 128,492, granted and issued to Joseph

Barsaloux, Jeremiah S. James and Nelson Lyon, when corrected by the Acting Commissioner of Patents, as

directed by said act, was a good and valid patent.

That the said Joseph Barsaloux was the original and first inventor of the improvements in metallic stiffen-

ers for boot and shoe heels mentioned and described in said letters patent.

That the said Nelson Lyon, by his Letters Patent No. 912, dated May 11, 1880, granted to said Nelson Lyon for an improve-

ment in metallic heel stiffeners for boots and shoes, originally patented as aforesaid, is a good and valid

patent; that said Lyon is exclusively possessed of said Letters Patent and the invention thereby secured.

That the defendants, G. T. Fisher & Co., and each of them, have infringed upon the said patents and upon

the exclusive rights of said Lyon under the same.

That said Lyon receive of said defendants all the profits, &c., they have made, and in addition thereat all

the damage he has suffered by reason of the infringements by the defendants, and also the costs, charges and

disbursements in the action.

It is also further ordered, adjudged and decreed, that a perpetual injunction be issued against said defend-

ants, according to the prayer of the said complainant's bill.

You are also hereby notified that the perpetual injunction has been issued and served on the defendants.

All questions as to damages and settlements in relation to infringements under my

patents must be addressed to and made with my attorney, WILLIAM H. KING, in my care,

at the above address.

NELSON LYON.

EXCELSIOR LAWN MOWER



Side Wheel Pattern.



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We make Seven Sizes of Roller Mowers and Six Sizes of Side-Wheel
Mowers. We claim for our Mowers

Perfect Work, Light Draft and Simplicity.

We have received many first premiums in competitive trials with other Mowers, both
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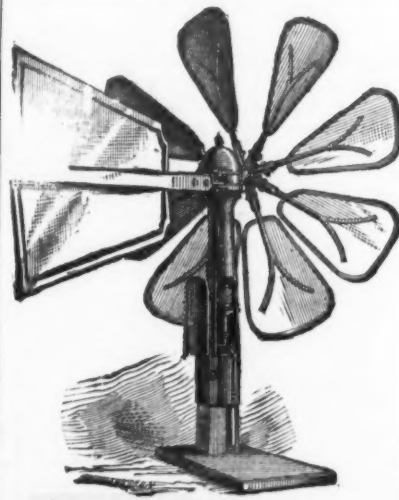
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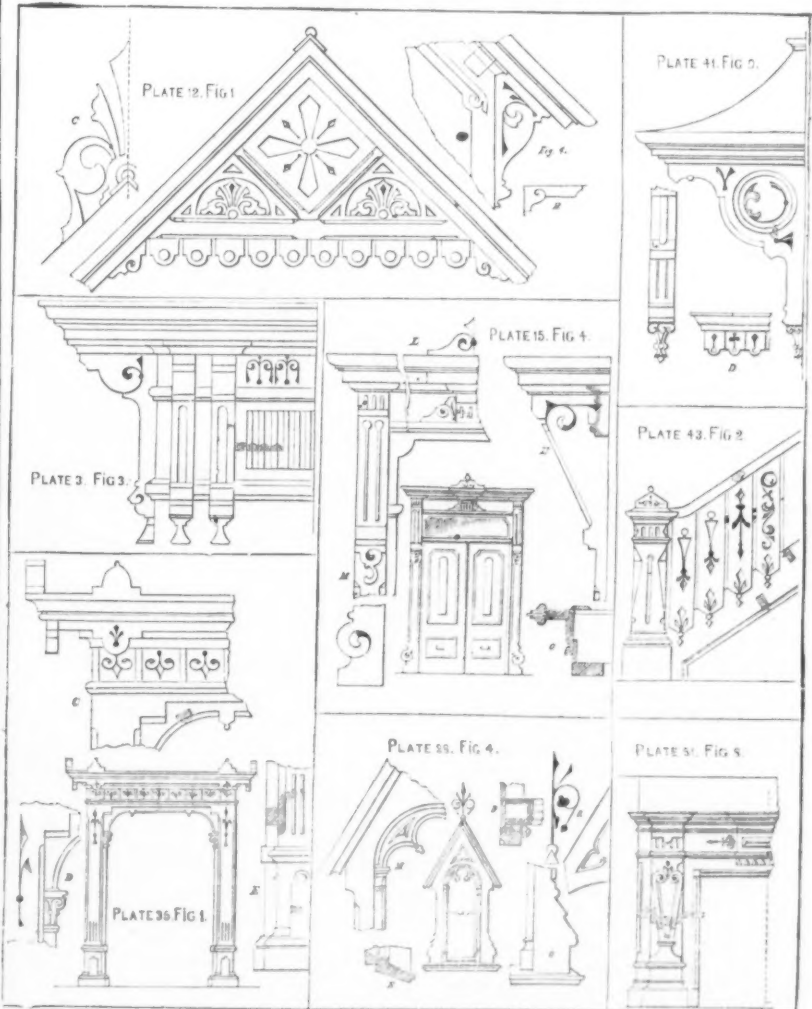
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Of the Various Parts needed in the Construction of Buildings,
Public and Private, both for the City and Country; also
Plans and Elevations of Houses, Stores, Cottages,
and other Buildings.

By M. F. CUMMINGS, M. A., Architect.

Associate Author of "Architecture, by Cummings & Miller."

(CUTS REDUCED FROM PLATES INDICATED.)



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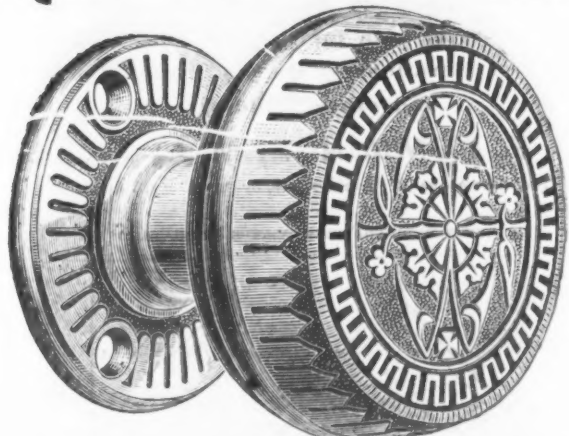
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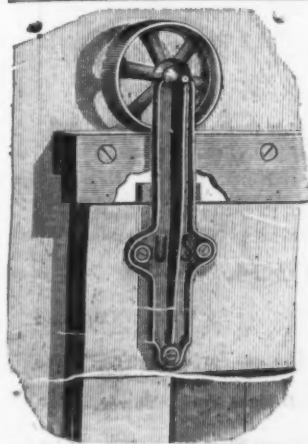
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By using these Hangings you save the cost of iron rail.

They cannot be thrown off the track.

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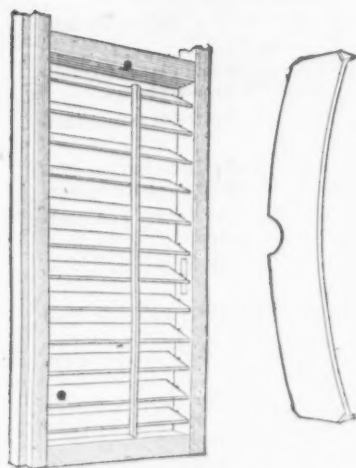
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Its superiority over other holders is evident.

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Made of extra quality iron. A practical labor-saving tool. Cuts against the grain equally as well as with it. Can be adjusted instantly to cut a coarse or fine shaving, and excels any double iron plane ever produced.



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Outfits complete, with Dynamo-Electric Machine Tanks, Anodes, Solution, &c., &c., \$250.

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INFRINGEMENTS.

We call attention to infringements of the Weston Machine, in which Automatic Switches are used to prevent change of current. The Weston Co. are owners by grant or purchase of all forms of Automatic Switches for Plating Machines. The adoption of these machines will certainly lead to great loss to parties purchasing or using them.

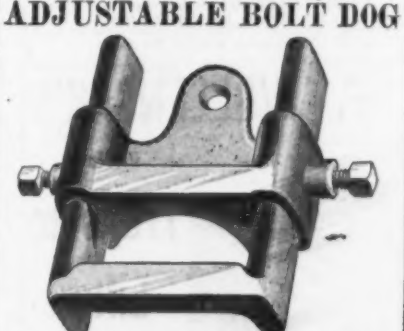
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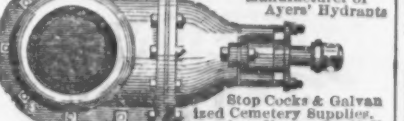
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Established 1865. Send for pamphlet.

ELMIRA, N. Y.



Stop Cocks & Galvan

ized Cemetery Supplies,
298 & 300 Monroe St., N. Y.

A. PARDEE, Hazelton, Pa. J. G. FELL, Phila.

A. PARDEE & CO.,

237 South Third St.,

PHILADELPHIA,

No. 111 Broadway, New York.

MINERS AND SHIPPERS OF

Lehigh Coals.

The following superior and well-known Lehigh

Coals are mined by ourselves and firms connected

with us, viz.

A. Pardee & Co. { HAZLETON,

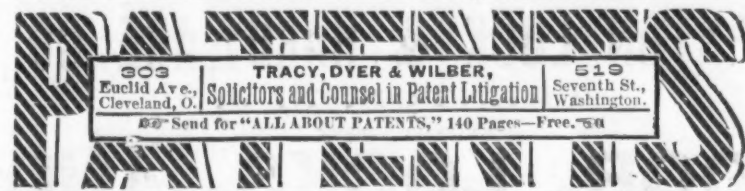
Pardee, Bro. & Co. { CRANBURY,

Calvin Pardee & Co. { SUGAR LOAF,

Pardee, Sons & Co. { LATTIMER,

Calvin Pardee & Co. { HOLLYWOOD,

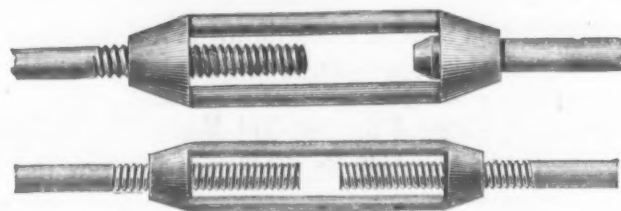
Pardee, Sons & Co. { MT. PLEASANT,



Providence Tool Co.,

PROVIDENCE, R. I.

Turn Buckles.



1/2 inch.....	each, \$1.00	1 inch.....	per lb., \$0.17
3/4 inch.....	" 1.25	1 1/4 inch.....	" .17
1 inch.....	per lb., .20	1 1/2 inch.....	" .16
1 1/4 inch.....	" .18	1 3/4 inch.....	" .16

Larger sizes made to order.

Liberal discount to the trade.

Please observe in ordering that these Turn Buckles are made Right and Left Hand Threads. The sizes given are diameters at bottom of thread, thus making the buckle equal in strength to the rod for which it is intended.

Swivel Turn Buckles, like first cut above, made only to order.

HENRY B. NEWHALL,

105 Chambers Street, - - New York Agent.

THE TURNER & SEYMOUR MFG. CO.

WOLCOTTVILLE, CONN.,

MANUFACTURERS OF

Upholsterers', Stationers', House Furnishing & Fancy

HARDWARE AND NOTIONS.

The Turner and Seymour Mfg. Co. have been longer in the business and make a greater variety of Cast Iron Scissors and Shears than any other concern in the world. Our

"AMERICAN" SHEARS

have long been conceded to be the best ever made. The quality and finish of these goods shall always be maintained.

To meet the demand for a cheaper line we offer the trade our

"CLIPPER" SHEARS.

On these we cannot be undersold. Price is about 25 per cent. less than the "American."

We are now making a fine line of cheap

Nickel Plated Scissors and Shears, Nut Picks,
Nut Crackers, Fruit Knives &c.

Price Lists furnished on application.

BROWER & LEEDS,

81 Murray Street, New York.

HARDWARE MANUFACTURERS' AGENTS.

Sole Agents For JOHN BAYLISS' Celebrated

Hurricane Bellows, Portable Forges, Hot Blast
and Water Tuyeres.

THE "BOSS" SCYTHE RIFLE.

Warranted not to scale or glaze. Impervious to water, and not affected by heat. It is the best Rifle now offered.

LEVI L. BROOKS, Manufacturer, Millbrook, N. Y.

BROWER & LEEDS, Sole Agents, 81 Murray Street, New York.

R. J. ANDERSON, President. A. B. PARKER, Vice-Pres. JAS. A. VAN BRUNT, Sec'y & Treas.

NEW YORK WIRE AND WIRE ROPE CO.

Manufacturers of

WORKS: South Brooklyn

AND Mott Haven, N. Y.

New York Office: 23 Astor House.

WIRE, FURNITURE SPRINGS & UMBRELLA FRAMES.

COXE BROS. & CO.,

Cross Creek Lehigh Coal.

The Purity and Strength of this Coal especially adapt it for the working

of Iron and Metals.

GENERAL OFFICE, Room 12 Trinity Building, 111 Broadway, New York.

BRANCH OFFICES, Chicago, Ill., 94 Dearborn Street.

Philadelphia, 200 Walnut Place.

Boston, 53 Kilby St.

E. B. & S. W. ELY, Agents, P. O. Box 262, N. Y.

OHIO GRINDSTONE CO.,

127 Superior Street,

CLEVELAND, OHIO.

Grindstones.

PENFIELD BLOCK WORKS, Lockport, N. Y., U. S. A.

BLOCKS

HENRY B. NEWHALL,
105 Chambers St.,
New York Agent.

Sheaves, Faucets, Mallets
and Car Pushers.

S. H. & E. Y. MOORE,
163 & 165 Lake St.,
Chicago Agents.

Gentlemen.—This cut illustrates our

CAST IRON

Furnace Lamps

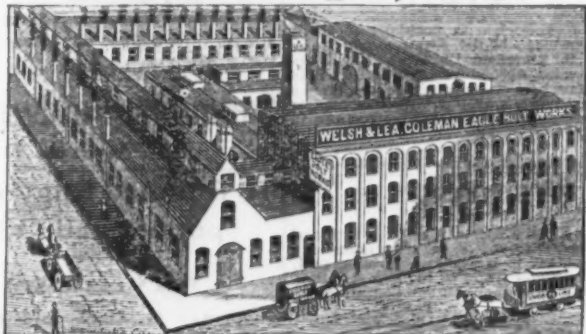
which are superceding entirely the Tin Lamps
wherever introduced, in consequence of their dur-
ability. They are now extensively used in the
Iron Districts of Ohio and some in Pennsylvania.
We call your attention to and solicit your order
for them, confidently asserting that they are an
A No. 1 article in every respect.



Sample sent if desired.
PRICE, \$12 PER DOZEN.

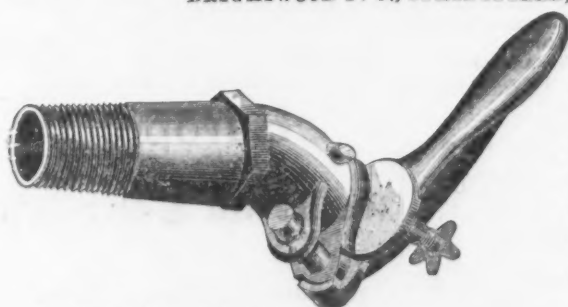
Taylor & Boggis,
CLEVELAND, O.

NORWAY IRON CARRIAGE & TIRE BOLTS, Axle Clips, &c.



COLEMAN EAGLE BOLT WORKS,
WELSH & LEA, Philadelphia, Pa.

THE GENUINE STEBBINS MOLASSES & OIL GATES, MANUFACTURED ONLY BY E. STEBBINS MFG. CO., BRIGHTWOOD P. O., SPRINGFIELD, MASS.

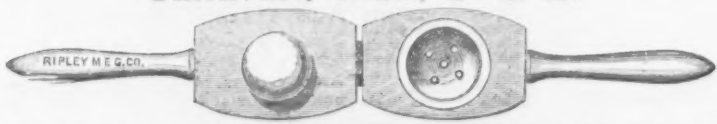


To the Hardware
Trade:—Our arrange-
ment with Messrs. Sargent
& Co. for the sale of the
"Genuine Stebbins Molasses
Gates" expired Decem-
ber 31, 1880. Here-
after we will supply the
trade direct. Orders solic-
ited. Address

H. M. BREWSTER, Agent,
Brightwood P. O., Mass.

The Western trade can be supplied by
TREDWELL, COPPINS & CO., 130 Lake St., Chicago, Ill.

RIPLEY MANUFACTURING CO., Unionville, Conn., U. S. A.



BEST PORCELAIN-LINED LEMON SQUEEZERS
"COMMON SENSE" MOUSE TRAPS.
HAND-MADE ROSEWOOD FAUCETS, &c., &c.

SABIN MFG. CO., MONTPELIER, VT., MANUFACTURERS OF

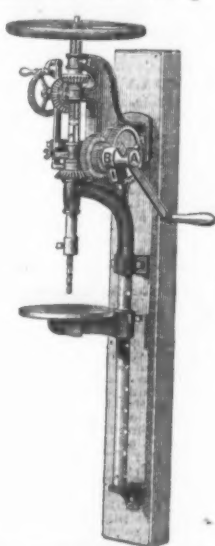
DOUBLE-ACTING SPRING BUTTS,
SABIN'S LEVER DOOR SPRINGS, For heavy doors,
BOSS AND CROWN SPRINGS, For light doors.

Send for Catalogue. Represented in New York by DAVID HYNES & CO., 99 Church St.

GEORGE C. TAFT,

Worcester, Mass., U. S. A.,
Manufacturer of

Improved Upright and Horizontal
Self-Feed Drills,
For Blacksmiths' and Carriage Makers' Use.



Illustrated circular, giving descriptions of my several self drills,
sent on application.

This cut represents my No. 2 Improved Drill,
double geared, so arranged that by moving the
crank from A to B it will give a slow motion for
heavy drilling to the drill spindle.

Bergen Port Spelter

MINES: WORKS & FURNACES
Lehigh Valley, Pa. Bergen Port, N. J.
The only Miners and Manufacturers of

PURE LEHIGH SPELTER

From Lehigh Ore.

Especially adapted for
Cartridge Metal and German Silver.

Also manufacturers of
BERGEN PORT OXIDE ZINC.

Superior for LIQUID PAINT on account of its body
and wearing properties.

F. OSGOOD & CO., Proprietors.
E. A. FISHER, Agent, 13 Burling Slip, N. Y.

Bridgewater Iron Co.,

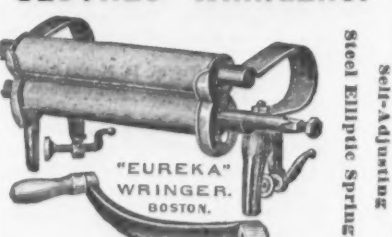
Bridgewater, Mass.,
Manufacturers of
SEAMLESS DRAWN
COPPER AND BRASS TUBES,
TACK PLATES,
Forgings of every description.
Bridgewater Iron Co.'s
HORSE NAILS.
PRICE LIST.
Nos. 5 6 7 8 9 10
Per lb. 25¢ 23¢ 21¢ 20¢ 19¢ 18¢
Liberal discounts to the Trade.
73 Pearl Street, New York.
28 Broad Street, Boston.

THE "RIGHT SPEEDY" CORN SHELDER

Is the best Hand Sheller
made; does the best work
and works the best. Is war-
ranted five years.
Agents Wanted in every County.
Sample sent on receipt
of \$5.00.
Specially adapted for export.
Address Patentee and Sole
Manufacturer,
CURTIS GODDARD
Alliance, Ohio, U. S. A.



CLOTHES WRINGERS.



T. J. ALEXANDER, Manager,
BOSTON, MASS.

LAMBERSON'S

PRICE BOOKS.

Full Leather, \$7.50. Half Leather, \$6.50.
Pocket Edition, Full Leather, \$4.50.
Pocket Edition, Half Leather, \$3.50.
Screw List, 50 cents.
Lamberson's Discount Book, 50 cents.
Address all orders to Pope & Stevens, General
Agents, 90 Chambers Street, N. Y.
For sale at publisher's price by Wm. Blair & Co.,
Chicago; A. F. Shippleigh & Co., St. Louis; C. B. James,
Detroit.

INDUSTRIAL ITEMS.

(Continued from page 16.)

S. J. Cresswell has taken the contract for
the ironwork in connection with the new
building for the American Steamship Com-
pany, to be erected on Walnut street, above
Third street, Philadelphia. Mr. Cresswell
is also furnishing all the ironwork in con-
nection with the large sugar refinery which
is being built for E. C. Knight & Co., of
Philadelphia.

Kirkpatrick & Co., of the Leechburg
Rolling Mill, at Leechburg, have struck an
excellent vein of gas in their new well at a
depth of 1203 feet. They laid the pipes and
connected it with their rolling mill on the
18th. The gas is sufficient to supply all their
works, and there is enough left to illuminate
the town through a large burner in the rear
of their office.

The preparations to begin work on the
large contract received by the Mellert Foundry
and Machine Company, of Reading, for the
manufacture of water pipes for New York
city, are progressing finely, and it is
expected that the first pipe will be made in
a few weeks. Immense flasks are being
made in which to cast the pipe, iron tanks
are being constructed in which to "tar" the
pipe, ovens are being built to dry them after
they have been dipped in the tar, and large
cranes are being erected and other work
pushed so as to begin the casting of the
large pipe as quickly as possible.

Robert Hare Powell's new furnace at Sax-
ton will probably be ready to begin turning
out iron about July 4 next.

Operations have been resumed at the
Parker City Glass Works, and such changes
have been made in the plant as will, it is
hoped, prevent all trouble in the future.

An order has been placed in the Penn-
sylvania Railroad shops at Altoona for the
manufacture of ten new class B locomotives,
which will have driving wheels of 63 inches
in diameter.

The Phoenixville Iron Mills were forced to
stop work last week by the high water.

The L. B. Flanders machine shops in
Philadelphia are busy on their specialties.
They are now building valve-seat planing
machines for the New York Central Rail-
road Shops at Albany, and for the Wabash,
St. Louis and Pacific Railway, at St. Louis,
Mo. They have several orders also for
crank-pin machines, for Chicago chiefly.

The organization of a company with a
capital of \$50,000 or \$100,000, for the pur-
pose of manufacturing sewing machines in
West Chester, is contemplated.

PITTSBURGH AND VICINITY.

The postmaster of Pittsburgh has a law-
suit on his hands, instituted by the Yale
Lock Manufacturing Company for an alleged
infringement of a patent for post-office
boxes with a metallic front, which he used
in making some changes in the post-office
recently.

The demand of the molders in three of
the Pittsburgh stove foundries for an in-
crease in the wages of 10 per cent., has
been agreed to by the proprietors. The
other establishments of the same kind in
that vicinity will probably take the same
action in a few days.

The Crescent Steel Works of Miller, Met-
calf & Parkin, Pittsburgh, is on double turn.
A pot burst at Phillips' glass works on
the 17th inst., and no one has been able to
give any explanation of the cause. The
bursting was followed by an explosion that
was heard throughout the works.

The ore crusher at Chess, Cook & Co.'s
broke on the 17th inst.

Singer, Nimick & Co., of Pittsburgh, are
running their Sheffield Steel Works double
turn in all departments. Their plant con-
sists of 30 coke melting holes, four 24-pot
Siemens furnaces, 12 trains rolls, 11 steam
hammers, 8 converting furnaces, 12 pud-
dling and 17 heating furnaces.

The Superior Mill, Allegheny City, is
running only single turn at present, mak-
ing steel and iron structural material.
Twenty-nine puddling and 12 heating fur-
naces, four trains of rolls, two steam ham-
mers and one Universal mill, built under
Andrew Klonan's patents, comprise the
facilities. There are 350 workmen and the
capacity per week will reach 200 tons,
exclusive of steel rails; steel rails 800 tons.

MARYLAND.

The Union File Works in Baltimore find
their new building too small, and to meet
the requirements of their growing trade,
they are preparing plans for a further ex-
tension, as soon as the weather will permit.
Less than a year ago it was supposed their
facilities would be ample, but they have
proved to be quite inadequate. The proprie-
tors will confine themselves, as before,
strictly to the production of first class goods.

ILLINOIS.

Messrs. Warren & Springer, Chicago, man-
ufacturers of new, and one of the largest
dealers in the United States in second-hand
machinery, say that business is very satis-
factory. They are receiving numerous in-
quiries from the Northwest, particularly
from Minnesota, to which State they have
just shipped four car-loads, and have on
hand a contract to finish a large quantity of
dock machinery for Duluth.

Messrs. G. A. Crosby & Co., manufacturers
of presses, dies and all kinds of tinners'
tools, are very busy and report trade ex-
cellent. They have just completed a con-
tract for dies and machinery to manufacture
tin cans for a prominent firm in this city;
also three machines to manufacture barbed
wire fencing for Joliet Barb Wire Fence
Co., and are at present employed on a
large contract for presses, to supply a
Kansas City firm. They have also been
appointed by Messrs. Beecher & Peck, of New
Haven, to represent their Western agency
for their presses &c.

The United States Manufacturing Com-
pany, manufacturers of the tubular and
King sawing machine, report sales for this
season of the year good, and the demand
steadily increasing. They are at present
negotiating for a site on the north side to
erect a new structure four stories in height,
to occupy a space 50 x 150 feet, in order to
give them proper facilities for supplying the
increasing demand for their goods.

The Duplex Caster Company, manufac-
turing Bruckebush's patent duplex caster
for furniture and trucks, report the demand
for these goods very satisfactory. They
also manufacture a new article for house-
hold use, called the duplex clothes rack,
consisting of nine wooden rods, each 3 feet
long and 3/4 inches thick, one or all of which
can be put up as desired. The rack, when
not in use, occupies a space of 2 1/2 x 6
inches against the wall. It is one of the
most useful and convenient racks on the
market.

Messrs. Fieldhouse, Dutcher & Belden,
manufacturers of wrought-iron pipe, report
business satisfactory, and the outlook for
a large spring trade good. Their present
capacity for production amounts to about
500,000 feet of pipe per annum. This
spring they will erect new buildings, enab-
ling them to increase this building to 3,-
000,000 feet per annum, if necessary. They
estimate the amount of business they will do
the present year will reach about \$500,000.

The manufacturers of barb wire who have
settled with the Washburn and Moen Manu-
facturing Company, and are licensees of
theirs, met in Chicago on the 16th inst. There
were 31 concerns represented, from differ-
ent parts of the country. Mr. A. K. Stiles
was appointed temporary chairman, and Mr.
Charles O. Collins temporary secretary. A
committee on permanent organization was
appointed, and the constitution and by-laws
were considered.

It is said the Wagner Palace Car Com-
pany is to give a thorough test to a newly
patented car wheel, which is furnished with
a layer of rubber between the solidly cast
wheel and steel-faced tire. This wheel, it is
claimed, has given enough to it to prevent
the frequent breaks which occur from a
wheel striking a frog.

The Chicago Times reports a strike in
Pullen's foundry, in consequence of orders
from the molder's union to quit work
because their demand for an increase of 15
per cent. in wages was not granted. The
strikers say that the demand of the union
has been met by Collins & Burgie and by
the Chicago Stove Company, as well as by
the manufacturers of other cities. Nineteen
employees of the United States Foundry, at
Nos. 90 to 100 Erie street, also struck for
the same reason. J. Baldwin runs the latter
establishment, which is said to be conducted
on the Cleveland co-operative plan. The
strikers contend that their demands ought
to be complied with, since nearly all the
molders in the city have received their
desired advance in wages.

OHIO.

The Cleveland Rolling Mill Company have
announced the fact that early this spring
they will begin the building of four of the
largest blast furnaces in the world. Each
furnace will cost \$75,000, and will be situ-
ated near the Conotton, the Valley and
Mahoning Railroads and the canal, thus
being convenient to receive coal from four
sources. The furnaces will be ready for
use during the coming fall, and will be for
the manufacture of pig iron from Lake Su-
perior ore.

The Western Lock Company, Geneva, are
running overtime, and are employing 150
skilled hands.

The Logan Furnace went out of blast on
the 14th inst. on account of not being able
to get a supply of ore to continue in blast.
It will go into blast in a few weeks.

Madison Furnace is putting in a new
hearth and inwall.

Messrs. Pennock Bros., Minerva, builders
of railroad cars, have purchased a ten-acre
lot of ground upon which to erect their
shops.

The new building of the Knife Works
Company, Akron, will have a frontage of
200 feet on the railroad, and a width of 40
feet, three stories high.

The Geneva Tool Company, Geneva, are
extremely busy at the present time. The
number of men employed is 75.

Mr. F. P. Jenkins, Columbus, has started
a new enterprise, the Columbus Gear and
Body Company, and is now ready for busi-
ness.

The Porter Iron Roofing Company, Cin-
cinnati, have just completed their new ma-
chinery for the manufacture of corrugated
iron. They have lately sold a very large
amount of roofing to New York parties to
cover a number of buildings at Apalachicola,
Fla.

The North American Cutlery Company,
Painesville, report trade good. They man-
ufacture all kinds of shears, and with the
new facilities will be able to turn out sixty
dozen per day.

About 400 molders in Cincinnati are out
on strike for an increase of 25 per cent. in
wages, which had been refused. The strike
is by order of Union No. 21. It does not in-
clude stove molders.

TENNESSEE.

D. Giles & Co., Chattanooga Foundry and
Pipe Works, are engaged upon some heavy
contracts for the Sewanee Furnace Com-
pany, and will soon commence filling a con-
tract for castings for a new blast furnace in
Kentucky.

The furnace being built at Cowan is to
have three Whitwell stoves and two large
Weimer engines.

It is understood that the Oakdale Iron
Company will soon commence the erection
of a charcoal furnace at Humint Station.

WISCONSIN.

The Hurlbut Manufacturing Company,
located at Racine, manufacturers of the
Hurlbut lock for wagon brakes, are extend-
ing their business to all parts of the world.
They recently received an order for a large
shipment of these celebrated locks to New
Zealand.

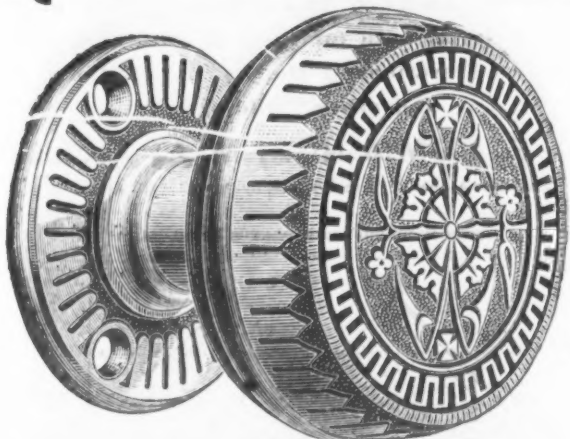
MISSOURI.

St. Louis is to have locomotive works
which will construct 500 engines every year.
The new company that will undertake the
erection of these works has a working cap-
ital of \$2,500,000.

The Kingsland & Ferguson Manufactur-
ing Company, St. Louis, have been crowded
for some time with orders for saw mills and
portable engines. Their small plantation
mill is becoming very popular in the South.
This company was the first to make circular
saw mills.

The Tudor Iron Co., of St. Louis, con-
template enlarging their works. The ca-

BRANFORD LOCK WORKS, ANTIQUE PATTERN KNOBS.



Full size cut.

We have issued, under date of June 10, a complete revised Price List, a copy of which, with our 1500 Illustrated Catalogue, will be furnished to the trade free on application. Said Catalogue contains illustrations and descriptions of over 1000 different varieties of Door Locks, Knobs and Escutcheons.

MANUFACTORY AND OFFICE

BRANFORD, CONN., U. S. A.

THE STANLEY WORKS,

MANUFACTURERS OF

Wrought Iron Butts, Hinges

AND

DOOR BOLTS,

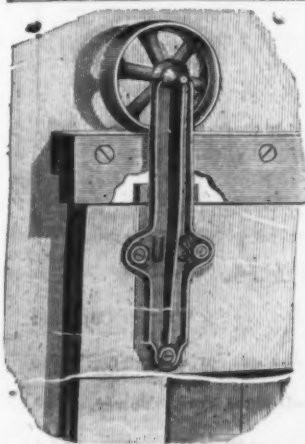
Plain, Japanned, Bronzed and Plated.

FACTORIES:

WAREHOUSE:

New Britain, Connecticut.

79 Chambers St., New York.



THE U. S. WOOD TRACK BARN DOOR HANGINGS.

Patented April 13, 1869; Reissued Jan. 17, 1881.

This patent covers all rail with a recess in the under side.

By using these Hangings you save the cost of iron rail.

They cannot be thrown off the track.

We also manufacture

Anti-Friction and Check-back Hangings, Rail, Stay Rollers, &c.

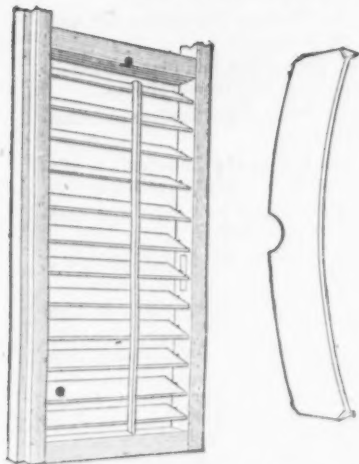
Send for price list.

MEDINA MANUFACTURING CO.,
SAMSON & SWETT, Props., Medina, N. Y.

BENTLEY'S Perfect Blind Slat Holder.

Patented.

SUPERIOR TO ALL OTHERS.



For tightening the Slats of Window Blinds and holding them at any required angle.

The sunlight is let in or shut out at will. The blinds are made a much better protection from cold, because when the slats are shut they are so kept by the Holder and cannot be moved by the action of the wind.

Noisy rattling of the slats is prevented.

The holder is securely held by its spring and the sharp points at each end.

As it is made of brass it will not rust.

It cannot get out of order.

Its superiority over other holders is evident.

It requires no screws or nails to fasten it to the blind. Any one can apply it.

It cannot get loose or deface the blind as others do.

Retail Price, 5 cents each; 50 cents per dozen;

At which price samples will be mailed postpaid.

Trade Price, \$6 per gross; Discount 50 per cent.

FOR SALE BY THE TRADE.

In case your jobbing house cannot supply you, orders will be promptly filled by

R. W. BENTLEY, Sole Manufacturer,
41 FOURTH ST., BROOKLYN, E. D., N. Y.

LAFLIN MFG. CO., Westfield, Mas

Manufacturers of

PAT. IMPROVED STEAM
HEATING APPARATUS.LAFLIN MFG. CO.'S
Pat. Single Iron Plane

Made of extra quality iron. A practical labor-saving tool. Cuts against the grain equally as well as with it. Can be adjusted instantly to cut a coarse or fine shaving, and excels any double iron plane ever produced.



WESTON DYNAMO-ELECTRIC MACHINE NICKEL.

The rapid increase in the use of Nickel-Plating owing to the introduction of the Weston Machine and the very low price of nickel material, enables us to give greatly reduced estimates for complete outfits.

We are furnishing outfits specially adapted for Store Work, giving a pure white deposit on plain or mat surfaces.

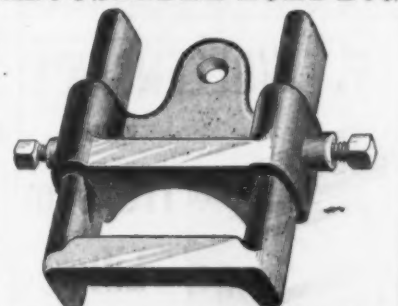
Outfits complete, with Dynamo-Electric Machine Tanks, Anodes, Solution, &c., &c., \$250.

We beg to refer to the following Store Manufacturers among 500 other houses using the Weston Machine: Richardson & Boynton, S. S. Jewett & Co., Fuller, Warren & Co., Perry & Co., Detroit Stove Works, Michigan Stove Co., Co-operative Stove Co., E. & C. Gurney, Hamilton & Toronto, and many others.

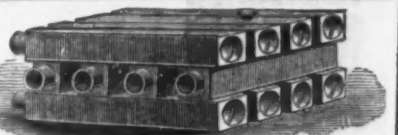
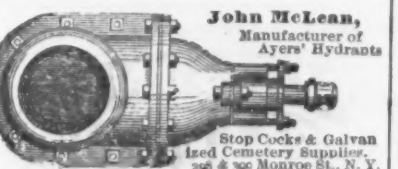
We call attention to infringements of the Weston Machine, in which Automatic Switches are used to prevent change of current. The Weston Co. are owners by grant or purchase of all forms of Automatic Switches for Plating Machines. The adoption of these machines will certainly lead to great loss to parties purchasing or using them.

CONDIT. HANSON & VAN WINKLE
Sole Agents NEWARK, N. J., U. S. A.
NEW YORK OFFICE, 92 & 94 Liberty St.
ENGLISH AGENCY: 18 Caroline Street, Birmingham.

H. H. COLES & CO., 446 North 19th St., Philadelphia. ADJUSTABLE BOLT DOG



Will hold all sizes of bolts up to 2 1/2 inches; is very handy for turning flat work. Price, \$1.

A. WYCKOFF,
Manufacturer of
Wyckoff Patent Wood Water Pipe,
Steam Pipe Casing,
Chala Pump, Tube, Curbs, Reels, Rubber
Valves, Chain, &c.
Established 1855. Send for pamphlet.
ELMIRA, N. Y.

A. PARDEE, Hazelton, Pa. J. G. FELL, Phila.

A. PARDEE & CO.,

237 South Third St.,
PHILADELPHIA,

No. 111 Broadway, New York.

MINERS AND SHIPPERS OF

Lehigh Coals.

The following superior and well-known Lehigh Coals are mined by ourselves and firms connected with us, viz.

A. Pardee & Co.

Pardee, Bro. & Co.

Calvin Pardee & Co., HOLLYWOOD.

Pardee, Sons & Co., MT. PLEASANT.

{ HAZLETON.
CRANBURY.
SUGAR LOAF.

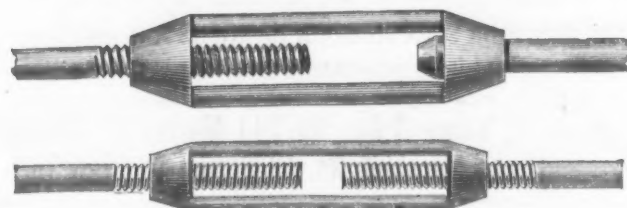
LATTIMER.



Providence Tool Co.,

PROVIDENCE, R. I.

Turn Buckles.



1/2 inch.....	each, \$1.00	1 inch.....	per lb., \$0.17
5/8 inch.....	" 1.25	1 1/4 inch.....	" .17
3/4 inch.....	per lb., .20	1 1/2 inch.....	" .16
7/8 inch.....	" .18	1 3/4 inch.....	" .16

Larger sizes made to order.

Liberal discount to the trade.

Please observe in ordering that these Turn Buckles are made Right and Left Hand Threads. The sizes given are diameters at bottom of thread, thus making the buckle equal in strength to the rod for which it is intended.

Swivel Turn Buckles, like first cut above, made only to order.

HENRY B. NEWHALL,

105 Chambers Street, - - New York Agent.

THE TURNER & SEYMOUR MFG. CO.

WOLCOTTVILLE, CONN.,

MANUFACTURERS OF

Upholsterers', Stationers', House Furnishing & Fancy

HARDWARE AND NOTIONS.

The Turner and Seymour Mfg. Co. have been longer in the business and make a greater variety of Cast Iron Scissors and Shears than any other concern in the world. Our

"AMERICAN" SHEARS

have long been conceded to be the best ever made. The quality and finish of these goods shall always be maintained.

To meet the demand for a cheaper line we offer the trade our

"CLIPPER" SHEARS.

On these we cannot be undersold. Price is about 25 per cent. less than the "American."

We are now making a fine line of cheap

Nickel Plated Scissors and Shears, Nut Picks,
Nut Crackers, Fruit Knives &c.

Price Lists furnished on application.

BROWER & LEEDS,

81 Murray Street, New York.

HARDWARE MANUFACTURERS' AGENTS.

Sole Agents For JOHN BAYLISS' Celebrated

Hurricane Bellows, Portable Forges, Hot Blast
and Water Tuyeres.

THE "BOSS" SCYTHE RIFLE.

Warranted not to scale or glaze. Impervious to water, and not affected by heat. It is the best Rifle now offered.

LEVI L. BROOKS, Manufacturer, Millbrook, N. Y.

BROWER & LEEDS, Sole Agents, 81 Murray Street, New York.

NEW YORK WIRE AND WIRE ROPE CO.

Manufacturers of

WORKS:

South Brooklyn

AND

Mott Haven, N. Y.



New York Office:

23 Astor House.

WIRE, FURNITURE SPRINGS & UMBRELLA FRAMES.

COXE BROS. & CO.,

Cross Creek Lehigh Coal.

The Purity and Strength of this Coal especially adapt it for the working of Iron and Metals.

GENERAL OFFICE, Room 12 Trinity Building, 111 Broadway, New York.

BRANCH OFFICES: Chicago, Ill., 94 Dearborn Street.

Philadelphia, 22 Walnut Place.

Boston, 53 Kilby St.

E. B. & S. W. ELY, Agents, P. O. Box 262, N. Y.

OHIO GRINDSTONE CO.,

127 Superior Street,
CLEVELAND, OHIO.

Grindstones.

PENFIELD BLOCK WORKS, Lockport, N. Y., U. S. A.
Manufacturers of a full line of

BLOCKS

HENRY B. NEWHALL, Sheaves, Faucets, Mallets and Car Pushers.
105 Chambers St., New York Agent.
S. H. & E. Y. MOORE, 163 & 165 Lake St., Chicago Agents.



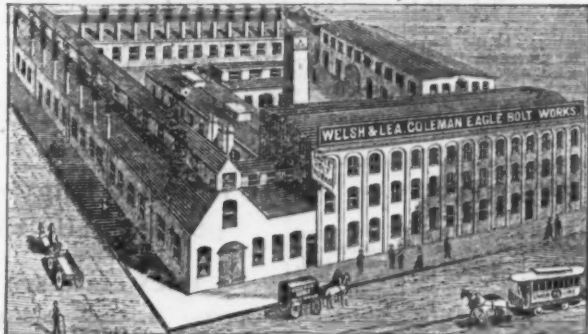
CAST IRON Furnace Lamps

Gentlemen.—This cut illustrates our which are superceding entirely the Tin Lamps wherever introduced, in consequence of their durability. They are now extensively used in the Iron Districts of Ohio and some in Pennsylvania. We call your attention to and solicit your order for them, confidently asserting that they are an A No. 1 article in every respect.

Sample sent if desired.
PRICE, \$12 PER DOZEN.

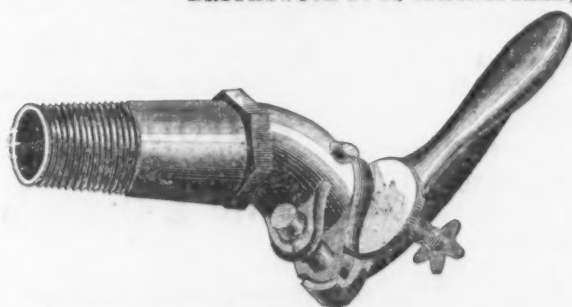
Taylor & Boggis,
CLEVELAND, O.

NORWAY IRON CARRIAGE & TIRE BOLTS, Axle Clips, &c.



COLEMAN EAGLE BOLT WORKS,
WELSH & LEA, Philadelphia, Pa.

THE GENUINE STEBBINS MOLASSES & OIL GATES, MANUFACTURED ONLY BY E. STEBBINS MFG. CO., BRIGHTWOOD P. O., SPRINGFIELD, MASS.

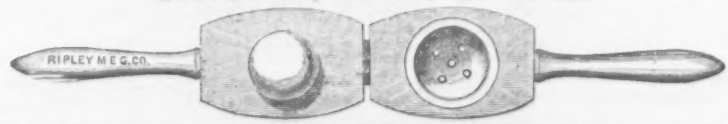


To the Hardware Trade:—Our arrangement with Messrs. Sargent & Co. for the sale of the "Genuine Stebbins Molasses Gates" expired December 31, 1880. Hereafter we will supply the trade direct. Orders solicited. Address

H. M. BREWSTER, Agent,
Brightwood P. O., Mass.

The Western trade can be supplied by
TREDWELL, COPPINS & CO., 130 Lake St., Chicago, Ill.

RIPLEY MANUFACTURING CO., Unionville, Conn., U. S. A.



BEST PORCELAIN-LINED LEMON SQUEEZERS
"COMMON SENSE" MOUSE TRAPS.
HAND-MADE ROSEWOOD FAUCETS, &c., &c.

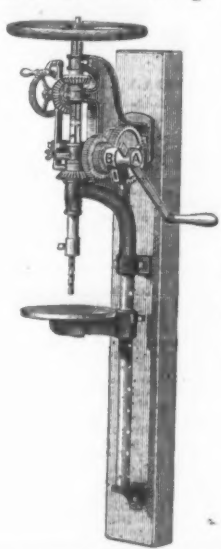
SABIN MFG. CO., MONTPELIER, VT., MANUFACTURERS OF

DOUBLE-ACTING SPRING BUTTS,
SABIN'S LEVER DOOR SPRINGS, For heavy doors,
BOSS AND CROWN SPRINGS, For light doors.

Send for Catalogue. Represented in New York by DAVID HYNES & CO., 99 Church St.

GEORGE C. TAFT, Worcester, Mass., U. S. A., Manufacturer of

Improved Upright and Horizontal
Self-Feed Drills,
For Blacksmiths' and Carriage Makers' Use.



Illustrated circulars, giving descriptions of my several size drills, sent on application.

This cut represents my No. 2 Improved Drill, double geared, so arranged that by moving the crank from A to B it will give a slow motion for heavy drilling to the drill spindle.

Bergen Port Spelter
MINES: WORKS & FURNACES
Lehigh Valley, Pa. Bergen Port, N. J.
The only Miners and Manufacturers of

PURE
LEHIGH
SPELTER
From Lehigh Ore.
Especially adapted for
Cartridge Metal and German Silver.

Also manufacturers of
BERGEN PORT OXIDE ZINC.
Superior for LIQUID PAINT on account of its body and wearing properties.

F. OSGOOD & CO., Proprietors.
E. A. FISHER, Agent, 13 Burling Slip, N. Y.

Bridgewater Iron Co.,
Bridgewater, Mass.,
Manufacturers of
SEAMLESS DRAWN
COPPER AND BRASS TUBES,
TACK PLATES,
Forgings of every description.
Bridgewater Iron Co.'s
HORSE NAILS.
PRICE LIST.
Nos. 5 6 7 8 9 10
Per lb. . . . 23¢ 21¢ 21¢ 20¢ 19¢ 18¢
Liberal discounts to the Trade.
73 Pearl Street, New York.
28 Broad Street, Boston.

THE
"RIGHT SPEEDY"
CORN SHELDER
Is the best Hand Sheller made; does the best work and works the best; is warranted five years.
Agents Wanted in every County.
Sample sent on receipt of \$5.00.
Specially adapted for export.
Address Patentee and Sole Manufacturer,
CURTIS GODDARD
Alliance, Ohio, U. S. A.

BECK & BENNETT,
CLEVELAND, O.
MANUFACTURERS OF
"STANDARD OAK"
BELTING
SPECIALTY OF
RUBBER GOODS
N. Y. BELTING & PACKING CO.

CLOTHES WRINGERS.



T. J. ALEXANDER, Manager,
BOSTON, MASS.

PRICE BOOKS.

Full Leather, \$7.50. Half Leather, \$6.50.
Pocket Edition, Full Leather, \$5.50.
N. Y. BELTING & PACKING CO.
Screw List, 50 cents.
Leigh's Discount Book, 50 cents.
Address all orders to Pope & Stephens, General Agents, 90 Chambers Street, N. Y.
For sale at publisher's prices by Wm. Blair & Co., Chicago; A. F. Shipleigh & Co., St. Louis; C. B. James, Detroit.

INDUSTRIAL ITEMS.

(Continued from page 16.)

S. J. Cresswell has taken the contract for the ironwork in connection with the new building for the American Steamship Company, to be erected on Walnut street, above Third street, Philadelphia. Mr. Cresswell is also furnishing all the ironwork in connection with the large sugar refinery which is being built for E. C. Knight & Co., of Philadelphia.

Kirkpatrick & Co., of the Leechburg Rolling Mill, at Leechburg, have struck an excellent vein of gas in their new well at a depth of 1203 feet. They laid the pipes and connected it with their rolling mill on the 15th. The gas is sufficient to supply all their works, and there is enough left to illuminate the town through a large burner in the rear of their office.

The preparations to begin work on the large contract received by the Mellert Foundry and Machine Company, of Reading, for the manufacture of water pipes for New York city, are progressing finely, and it is expected that the first pipe will be made in a few weeks. Immense flasks are being made in which to cast the pipe, iron tanks are being constructed in which to "tar" the pipe, ovens are being built to dry them after they have been dipped in the tar, and large cranes are being erected and other work pushed so as to begin the casting of the large pipe as quickly as possible.

Robert Hare Powell's new furnace at Saxton will probably be ready to begin turning out iron about July 4 next.

Operations have been resumed at the Parker City Glass Works, and such changes have been made in the plant as will, it is hoped, prevent all trouble in the future.

An order has been placed in the Pennsylvania Railroad shops at Altoona for the manufacture of ten new class B locomotives, which will have driving wheels of 63 inches in diameter.

The Phoenixville Iron Mills were forced to stop work last week by the high water.

The L. B. Flanders machine shops in Philadelphia are busy on their specialties. They are now building valve-seat planing machines for the New York Central Railroad Shops at Albany, and for the Wabash, St. Louis and Pacific Railway, at St. Louis, Mo. They have several orders also for crank-pin machines, for Chicago chiefly.

The organization of a company with a capital of \$50,000 or \$100,000, for the purpose of manufacturing sewing machines in West Chester, is contemplated.

PITTSBURGH AND VICINITY.

The postmaster of Pittsburgh has a lawsuit on his hands, instituted by the Yale Lock Manufacturing Company for an alleged infringement of a patent for post-office boxes with a metallic front, which he used in making some changes in the post-office recently.

The demand of the molders in three of the Pittsburgh stove foundries for an increase in the wages of 10 per cent., has been agreed to by the proprietors. The other establishments of the same kind in that vicinity will probably take the same action in a few days.

The Crescent Steel Works of Miller, Metcalf & Parkin, Pittsburgh, is on double turn. A pot burst at Phillips' glass works on the 17th inst., and no one has been able to give any explanation of the cause. The bursting was followed by an explosion that was heard throughout the works.

The ore crusher at Chess, Cook & Co.'s broke on the 17th inst.

Singer, Nimick & Co., of Pittsburgh, are running their Sheffield Steel Works double turn in all departments. Their plant consists of 30 coke melting holes, four 24-pot Siemens furnaces, 12 trains rolls, 11 steam hammers, 8 converting furnaces, 12 puddling and 17 heating furnaces.

The Superior Mill, Allegheny City, is running only single turn at present, making steel and iron structural material. Twenty-nine puddling and 12 heating furnaces, four trains of rolls, two steam hammers and one Universal mill, built under Andrew Klonan's patents, comprise the facilities. There are 350 workmen and the capacity per week will reach 200 tons, exclusive of steel rails; steel rails 800 tons.

MARYLAND.

The Union File Works in Baltimore find their new building too small, and to meet the requirements of their growing trade, they are preparing plans for a further extension, as soon as the weather will permit. Less than a year ago it was supposed their facilities would be ample, but they have proved to be quite inadequate. The proprietors will confine themselves, as before, strictly to the production of first class goods.

ILLINOIS.

Messrs. Warren & Springer, Chicago, manufacturers of new, and one of the largest dealers in the United States in second-hand machinery, say that business is very satisfactory. They are receiving numerous inquiries from the Northwest, particularly from Minnesota, to which State they have just shipped four car-loads, and have on hand a contract to finish a large quantity of dock machinery for Duluth.

Messrs. G. A. Crosby & Co., manufacturers of presses, dies and all kinds of tinners' tools, are very busy and report trade excellent. They have just completed a contract for dies and machinery to manufacture tin cans for a prominent firm in this city; also three machines to manufacture barbed wire fencing for Joliet Barb Wire Fence Co., and are at present employed on a large contract for presses, to supply a Kansas City firm. They have also been appointed by Messrs. Beecher & Peck, of New Haven, to represent their Western agency for their presses &c.

The United States Manufacturing Company, manufacturers of the tubular and King sawing machine, report sales for this season of the year good, and the demand steadily increasing. They are at present negotiating for a site on the north side to erect a new structure four stories in height, to occupy a space 50 x 150 feet, in order to give them proper facilities for supplying the increasing demand for their goods.

The Duplex Caster Company, manufacturing Brackebush's patent duplex caster for furniture and trucks, report the demand for these goods very satisfactory. They also manufacture a new article for household use, called the duplex clothes rack, consisting of nine wooden rods, each 3 feet long and 3/4 inches thick, one or all of which can be put up as desired. The rack, when not in use, occupies a space of 2 1/2 x 6 inches against the wall. It is one of the most useful and convenient racks on the market.

Messrs. Fieldhouse, Dutcher & Belden, manufacturers of wrought-iron pipe, report business satisfactory, and the outlook for a large spring trade good. Their present capacity for production amounts to about 500,000 feet of pipe per annum. This spring they will erect new buildings, enabling them to increase this building to 3,000,000 feet per annum, if necessary. They estimate the amount of business they will do the present year will reach about \$500,000.

The manufacturers of barb wire who have settled with the Washburn and Moen Manufacturing Company, and are licensees of theirs, met in Chicago on the 16th inst. There were 31 concerns represented, from different parts of the country. Mr. A. K. Stiles was appointed temporary chairman, and Mr. Charles O. Collins temporary secretary. A committee on permanent organization was appointed, and the constitution and by-laws were considered.

It is said the Wagner Palace Car Company is to give a thorough test to a newly patented car wheel, which is furnished with a layer of rubber between the solidly cast wheel and steel-faced tire. This wheel, it is claimed, has given enough to it to prevent the frequent breaks which occur from a wheel striking a frog.

The Chicago Times reports a strike in Pullen's foundry, in consequence of orders from the molder's union to quit work because their demand for an increase of 15 per cent. in wages was not granted. The strikers say that the demand of the union has been met by Collins & Burgie and by the Chicago Stove Company, as well as by the manufacturers of other cities. Nineteen employees of the United States Foundry, at Nos. 90 to 100 Erie street, also struck for the same reason. J. Baldwin runs the latter establishment, which is said to be conducted on the Cleveland co-operative plan. The strikers contend that their demands ought to be complied with, since nearly all the molders in the city have received their desired advance in wages.

OHIO.

The Cleveland Rolling Mill Company have announced the fact that early this spring they will begin the building of four of the largest blast furnaces in the world. Each furnace will cost \$75,000, and will be situated near the Conotton, the Valley and Mahoning Railroads and the canal, thus being convenient to receive coal from four sources. The furnaces will be ready for use during the coming fall, and will be for the manufacture of pig iron from Lake Superior ore.

The Western Lock Company, Geneva, are running overtime, and are employing 150 skilled hands.

The Logan Furnace went out of blast on the 14th inst. on account of not being able to get a supply of ore to continue in blast. It will go into blast in a few weeks.

Madison Furnace is putting in a new hearth and inwall.

Messrs. Pennock Bros., Minerva, builders of railroad cars, have purchased a ten-acre lot of ground upon which to erect their shops.

The new building of the Knife Works Company, Akron, will have a frontage of 200 feet on the railroad, and a width of 40 feet, three stories high.

The Geneva Tool Company, Geneva, are extremely busy at the present time. The number of men employed is 75.

Mr. F. P. Jenkins, Columbus, has started a new enterprise, the Columbus Gear and Body Company, and is now ready for business.

The Porter Iron Roofing Company, Cincinnati, have just completed their new machinery for the manufacture of corrugated iron. They have lately sold a very large amount of roofing to New York parties to cover a number of buildings at Apalachicola, Fla.

The North American Cutlery Company, Painesville, report trade good. They manufacture all kinds of shears, and with the new facilities will be able to turn out sixty dozen per day.

About 400 molders in Cincinnati are out on strike for an increase of 25 per cent. in wages, which had been refused. The strike is by order of Union No. 21. It does not include stove molders.

TENNESSEE.

D. Giles & Co., Chattanooga Foundry and Pipe Works, are engaged upon some heavy contracts for the Sewanee Furnace Company, and will soon commence filling a contract for castings for a new blast furnace in Kentucky.

The furnace being built at Cowan is to have three Whitwell stoves and two large Weimer engines.

It is understood that the Oakdale Iron Company will soon commence the erection of a charcoal furnace at Hummel Station.

WISCONSIN.

The Hurlbut Manufacturing Company, located at Racine, manufacturers of the Hurlbut lock for wagon brakes, are extending their business to all parts of the world. They recently received an order for a large shipment of these celebrated locks to New Zealand.

MISSOURI.

St. Louis is to have locomotive works which will construct 500 engines every year. The new company that will undertake the erection of these works has a working capital of \$2,500,000.

The Kingsland & Ferguson Manufacturing Company, St. Louis, have been crowded for some time with orders for saw mills and portable engines. Their small plantation mill is becoming very popular in the South. This company was the first to make circular saw mills.

The Tudor Iron Co., of St. Louis, contemplate enlarging their works. The ca-

capacity of the works at present is about 6000 net tons per year of railroad spikes and merchant iron.

Helmacher's forge and rolling mills are running full time manufacturing car axles and material which is being worked up there into coupling links and pins.

Conrad Siebe's brass foundry and machine shops on South Second street were destroyed by fire on Sunday morning last, entailing a loss of about \$14,000. The works will be rebuilt immediately.—*St. Louis Age of Steel.*

The Missouri Foundry and Car Co. are employing nearly 500 men, and are running full time on freight cars.

CANADA.

The Cambria and Bethlehem iron companies have unitedly purchased the Dufferin & Nelson iron mines, in Modoc, for \$55,000, and have secured a lease of the Wallbridge hematite mine for 13 years at a cost of \$20,000. They expect in a short time to take out ore at the rate of 700,000 tons per annum.

Special Notices.

SECOND-HAND and NEW TOOLS FOR SALE LOW.

February List, No. 2.

- 1 Pit Lathe, 31 1/2 ft. swing, will turn a pulley as wide as 4 ft. face.
- 1 Pit Lathe, 16 ft. swing, will turn a pulley 30 inch face, with gear-cutting attachment.
- 1 Lathe, 21 in. swing, 8 ft. bed. Rod feed.
- 1 Engine Lathe, 36 in. x 25 ft. 6 in. Cross feed, new.
- 1 Engine Lathe, 20 in. x 8 ft. Second-hand.
- 1 Engine Lathe, 11 in. swing, 4 ft. bed.
- 1 Foot Lathe.
- 1 Hand Lathe.
- 1 Horizontal Drilling Lathe, 24 in. swing, 10 ft. bed.
- 1 Planer, 36 in. x 10 ft.
- 1 Planer, 24 in. x 4 ft. New.
- 1 Hand Planer, 20 in. x 3 ft.
- 1 Dimension Planer, 24 in. x 15 ft.
- 1 Upright Drill Press, 16 in. swing.
- 1 Vertical Boring and Turning Machine, 60 inches automatic feed at any angle. Second-hand.
- 1 Large Upright Drill, 54 in. swing. Second-hand.
- 1 Suspension Drill.
- 1 Four-spindle Drill.
- 1 Boring Bar, 1 1/2 in. diam., 10 ft. long, self-feeding.
- 1 Boring Bar, 2 in. diam., 8 1/2 ft. long, self-feeding.
- 1 Forcing Machine, for forcing shafts off pulleys.
- 1 Combined Punch and Shear.
- 1 Steam Hammer, Cylinder, 7 1/2 x 30 in.
- 1 Steam Hammer, Cylinder, 11 x 36 in.
- 1 8x12 Horizontal Engine. New.
- 1 N. Y. Safety Power Co. Engine, 8x12.
- 1 McKenzie Cupolas, 4 ft. x 4 1/2 inside.
- 1 Ladies, &c., &c.
- 7 Cranes.
- 1 Jig Saws.
- 1 Pattern Makers' Lathes.
- 1 Post Drills.
- 1 Lathe, 16 x 6.
- 1 Upright Drills, 26 in. swing.
- 1 Boiler Punch, 18-in. throat.
- 1 Hand-Power Punch.
- 1 Hand Punches.
- 1 Trip Hammer, 100 lbs.
- 1 Bolt Pointer.
- 1 Cam Cutter.
- 1 Ellis Blind Slat Machine.
- 1 Pulley Polishing Lathe.
- 1 Double-acting Power Presses.
- 1 Single-acting.
- 1 Foot Presses.
- 1 Lot of Forges, Old Lathes, Planer and Lathe, Tools, Mandrels, Blacksmith and other Tools. Wood Working Machinery.

For sale by

The Geo. Place Machinery Agency,
121 Chambers and 103 Reade Sts.,
NEW YORK.

PHILADELPHIA, Jan. 1, 1881.

TO THE TRADE.

The undersigned, the last representative of the firm of J. BARTON SMITH & CO., established in 1843, finding it no longer possible to alone give proper attention to the increased demand for its celebrated brand of Files and Rasps, has transferred the business to the J. BARTON SMITH COMPANY. Thanking the trade for its liberal patronage in the past he respectfully solicits a continuance of the same for the new firm.

CHARLES F. CRIPPS,

Office and Works of the J. BARTON SMITH CO.,
Nos. 211, 215, 217 New Street,
PHILADELPHIA, Jan. 1, 1881.

Referring to the above, the undersigned beg to assure the trade that they will faithfully preserve in the future the high reputation of the well-known goods of the late firm of J. Barton Smith & Co., and with largely increased facilities will be able to promptly fill all orders they may be favored with. In addition to the line of Files and Rasps, they will also manufacture a full line of Wood Saws, Butchers' Saws, &c., of equal merit to the best made, soliciting the favors of the trade at lowest market rates. Respectfully,

CHARLES F. CRIPPS, President,
GILBERT PARKER, Treas. and Genl. Agt.
New York Branch, No. 128 Chambers street,
Wm. H. Bramhall, Manager, P. O. Box 2813.

LEIGH'S DISCOUNT BOOK

Specially arranged for the use of the
HARDWARE TRADE.
Acknowledged by all the best work of the kind ever published. Price, by mail, One Dollar.

Address, E. B. LEIGH,
IVISON, BLAKEMAN, TAYLOR & CO., New York.

To Manufacturers.

The advertiser can furnish office, salesroom and storage, with salesmen calling on all the jobbing trade from New York to California and South. To a manufacturer wishing New York office and salesmen this is a most excellent opportunity.

Address, FINE LOCATION,
Office of The Iron Age, 83 Reade St., New York.

SECOND-HAND DROP PRESSES

BOUGHT, SOLD & EXCHANGED.

BEECHER & PECK,
Lock Box 122, New Haven, Conn.

Bissell & Welles,
Wholesale Hardware Auctioneers,
83 Chambers and 65 Reade Sts., N. Y.

Sales held weekly for the trade. Consignments solicited. We refer to the leading Manufacturers and Importers.

Sanderson Bros. Steel Co.

A limited number of shares for sale by
EDWARD FRITH & SON,
241 Pearl street, New York.

Special Notices.

For Sale.

One Pratt & Whitney Tire Blank Header, new. Two Pratt & Whitney Screw Machines, capacity up to three-quarter inch, in good order, with a quantity of tools and dies.

One Pratt & Whitney make of Hot-pressed Nut Machine, cuts up to three-quarter inch, and could go as high as seven-eighth inch nuts, suitable for parties making track bolts, &c.

Also a full line of Bolt and Nut Machinery of our own manufacture.

NATIONAL MACHINERY CO.,
Cleveland, O.

For Sale.

The Little Schuylkill Rolling Mill,

at Milldale, Schuylkill County, Pa., near Port Clinton, on the line of the Philadelphia and Reading Railroad, consisting of a Merchant Bar Mill in complete running order, with a splendid water power sufficient to run the mill two-thirds of the year. Engines, Boilers, Foundry and Machine Shop, with Lathe for turning rolls, and all other appurtenances necessary to commence operation at once. Together with dwellings, stables and large tract of land, to be sold low if applied for soon. For further particulars address or apply to J. O. RICHARDSON,
No. 232 Dock street, Philadelphia.

BOILERS AND ENGINES FOR SALE.

Two Horizontal Boilers, 42 in. x 10 ft.; one has 90 2-in. tubes, the other 28 4-in. tubes; second hand.
New 30 H. P. Locomotive Boiler.
New and second-hand Vertical Boilers, 3 to 40 H. P.
New Vertical Engines, 5 x 6, 6 x 6, 7 x 6, 12 x 12.
Second-hand Vertical Engines, 4 x 6, 7 x 10, 8 x 8.
Second-hand Horizontal Engines, 12 x 14, 12 x 24, 12 x 36, 12 x 48, 15 x 30.
New Horizontal Engines, 7 x 12, 8 x 12, 10 x 12, 10 x 30.
Full description of any of these on application.
A. G. BROOKS & WINEBRENER,
261 North Third St., Philadelphia.

For Sale.

**THE COLUMBIA FOUNDRY AND
MACHINE WORKS.**

Lot 220 ft. front, 195 ft. deep. Machine Shop 60 x 40, with Pattern Shop in second story, and Smith Shop 34 x 28, with Engine and Boiler rooms attached. Foundry 75 x 53, with two Cranes and Brass Furnaces. Brick Buildings, slate roofs. Also, one Frame Pattern Warehouse, 48 x 28, slate roof. Drawings and Patterns for Blast Furnace and Rolling Mill work, Gas Works, Sugar Apparatus, Steam Engines and Machinery. Works established 1832. New Shops 1872. Shipments over competing Railroads. Undersigned have run the works continuously since 1870, and are doing a good business. Sale solely to dissolve partnership.
FERROTTE & HOYT,
Columbia, Pa.

For Sale.

Excellent Manufacturing Sites
on the line of Philadelphia and Reading Railroad, near Phoenixville, Pa. No cash required in payment.
Address, Z. ACKER,
Phoenixville, Pa.

For Sale.

FOUNDRY AND MACHINE SHOP. Established 1842. Well stocked with Patterns and Tools. Business good. Satisfactory reasons for selling. Address, A. L. VAIL,
Middletown, N. Y.

For Sale.

An old and well-established Hardware Business in a live town of 5000 inhabitants, in Southern Michigan. Stock in good condition. Will involve about \$10,000. A rare chance for an active man to secure a good business.
Address, E. D. & T.,
Office of The Iron Age, 83 Reade St., New York

For Sale.

A complete stock of Hardware, Iron, Steel, &c., of about \$25,000, in the best capital city west of the Mississippi. Large jobbing and retail trade established. Satisfactory reasons given for selling. Address, WESTERN,
Office of The Iron Age, 83 Reade St., New York.

For Sale.

A first-class Hardware Business in a wide-awake town in Central Michigan. Only one other Hardware store. Stock all new and fresh. Will involve about \$8000.
Address, MICHIGAN,
Office of The Iron Age, 83 Reade St., New York.

FOR SALE OR RENT.—Merrill Chase and Drawing knife works in the thriving village of Hinsdale, N. H., now running with orders in hand for three months run. Never failing water power, one mile from Conn. River, 16 from J. Russell & Co. Cutlery. Village has graded schools, four churches, &c. Subscriber has been actively engaged in the business here for many years, and would retain an interest if desired. The demand requires an extension of business, for which there are ample facilities as to room, power, &c.
Address, G. S. WILDER, Hinsdale, N. H.

Locomotives for Sale.

Four Locomotives, 4 ft. 8 1/2 in. gauge, built by Baldwin Locomotive Works for passenger service. Cylinders, 14x24; diameter of drivers, 58 in.; fuel, bituminous coal. All in good running order.
Address, W. S. WILSON,
227 South 4th St., Philadelphia.

For Sale.

The Machinery, Tools, Patterns, Stock and Fixtures of an old established Hardware Manufacturing Factory well located and running, having a good trade at the present time, which can easily be doubled. A rare chance for one or two live men with capital. Will bear the fullest investigation. Principals only dealt with.
Address, H. E.,
Office of The Iron Age, 83 Reade St., New York.

Special Notices.

ATTENTION, IRON MEN.

Assignee's Sale.

THE RIVERSIDE ROLLING MILL.

THE STATE OF OHIO, HAMILTON COUNTY, S. S.—Pursuant to the command of an order for sale from the Probate Court of Hamilton County, Ohio, and to us directed, we will offer for sale at public auction, on the premises, in the village of Riverside, near Cullum Station, in Hamilton County, Ohio.

On THURSDAY, March 10, 1881, at 10 o'clock a.m., the following described property as an entirety, and being the Riverside Rolling Mill, to wit:

That certain lot of real estate situated in Section 10, Township 3, Fr. Range 1, M. P., Hamilton County, Ohio, bounded and described as follows: To the north, the point where the west line of lot No. 2 (of the subdivision of the estate of Enoch Anderson, in said Section 10, intersects the south line of the right of way of the Ohio and Mississippi Railway Company, said south line being parallel to and 75 feet south of the center line of the Cincinnati and Whitewater Canal, thence eastwardly with said south line of right of way ninety-nine and two-tenths (99 2/10) feet to a stone thence 5 1/2 deg. 3 min. E. one hundred and sixty and 1/2 (166 1/2) feet to a stone; thence S. 12 deg. 28 min. E. two hundred and forty-five and seven-tenths (245 7/10) feet to a stone near the top of the river bank; thence 2 pairs rolls, engine twenty-eight inches by six feet, a fly-wheel and rollers' tools; 2 heating and one annealing furnace; 1 pair double shears, with engine; 1 battery of four rollers, with chimneys, heater and doctor pump, mud and steam drum, and pipe connections; river pump with pipe and wrought connections; iron water tank, well and tunnel; machine shop building, engine, shafting and tools; 1 upright boiler, with connections; elevator engine, tracks and 1 coal cars and 1 transfer truck; blacksmith shop and tools; 1 sixteen-inch bar train incomplete; 1 eight-inch guide train, incomplete; water delivery pipes for mill; 2 cranes; telegraphs; 1 ten-ton platform scale; 4 weighing scales; 2 mules, wagon and harness; floor plates; outbuildings; scrap cleaner; seven-hundred Cameron pump; office and furniture at mill; about 2000 feet of lumber.

The whole of said property valued as an entirety at \$65,000, and to be sold as an entirety for not less than two-thirds of the said total appraisement. To be sold by order of court in the proceedings of the assignment of the Riverside Rolling Mill Company. Terms of Sale—One-half cash on day of sale, one-fourth in six months, and one-fourth in twelve months, the deferred payments to bear interest at the rate of 6 per cent. from the day of sale, and to be secured by notes and mortgages on the said property. The Riverside Rolling Mill is located on the Ohio River, and within a few rods of the Ohio and Mississippi Railway and the Cin., Ind., St. L. and C. Railway, and is situated just outside of the corporate limits of Cincinnati, about five miles from the Plum Street Depot, and about one mile and a half below the western terminus of the Storrs and Sedamsville Street Railroad. A side track from the O. and M. Railroad runs directly into the Rolling Mill. The railroad and river facilities are excellent. The said buildings are all new and in good condition, and the said machinery is in good working order, the steam hammer being the largest set now in operation in the Old West. A careful examination of this property is invited.

AARON A. FERRIS, Assignee, and WM. H. CARUTHERS, Trustee, Of the Riverside Rolling Mill Company, Matthews, Hamsey & Matthews; Sayler & Sayler, Attorneys, Cincinnati, Ohio.

For Sale.

Stock of hardware, stoves and implements, and store furniture, in one of the best towns in Kansas. Address, HARDWARE,
Box 366, Salina, Kansas.

For Sale.

HARDWARE.—The controlling interest or the whole of a Jobbing Hardware House, already established and doing a profitable business; located in one of the large Western cities. For further particulars, address C. A.,
Office of The Iron Age, 83 Reade St., New York.

For Sale.

LARGE SLOTTED, 6 ft. between Columns, 4-ft. Table, stroke 18 in., ind. cross and circular movements. A heavy, well-built tool; in first-rate order; will be sold low. Photo on application.
Address, A. G. BROOKS & WINEBRENER,
261 N. Third street, Philadelphia.

FOR SALE.

Job Lots and Bankrupt Stocks Hardware. Great bargains offered to the trade.
Address, A. W. WHEELER,
141 Lake St., Chicago, Ill.

One-Thousand-Pound STEAM HAMMER FOR SALE.

In good order, and can be seen at our works.
WOOD, SMITH & CO.,
Fort Plain, N. Y.

For Sale.

To close an estate, THE MACHINERY, FURNACES, TOOLS, &c., of a Plate and Sheet Mill complete. Terms, one-third cash, balance long time if wanted. Address, THOS. B. MCKILLIP,
72 Washington St., Chicago, Ill.

For Sale.

Putnam Machine Co. Automatic Cut-off Engine, 13 x 36, band wheel, 10 ft. diameter, 21 inch face, in perfect order. Also, one 8 x 24 Side-spring Corlis engine.
Address, E. P. BULLARD,
Dealer in Machinery,
14 Day St., New York.

For Sale.

6 x 8 DOUBLE ENGINE, Link Motion. Suitable for Mine, Furnace or Quarry hoisting. Used very little. Good as new.
Address, A. G. BROOKS & WINEBRENER,
261 N. 3d St., Philadelphia.

FOR SALE.—FOUNDRY.

The attention of capitalists and others is invited to the large Pipe Foundry in Conshohocken, 12 miles from Philadelphia, to be sold at Sheriff's Sale, at Norristown, Pa., on the 23 day of March. For further information address S. PULTON, Conshohocken, Pa.

Special Notices.

For Sale.

A large manufacturing establishment, consisting of Machine Shop, Foundry, Boiler Shop, Paint Shop and Store House. Good brick buildings, fully equipped with necessary machinery, all in first-class condition. Lot 19 rods long and 13 rods wide. A switch from the Erie Railway runs directly to the shop, and the New York Central Railroad is but a few rods distant. The railroad accommodations for shipping are unsurpassed. The shop has been doing a very large business in the way of repairs. No other machine shop nearer than Buffalo or Rochester. Located at Batavia, half way between Buffalo and Rochester. The property can be bought upon reasonable terms. Call upon or address, R. B. PEASE, Batavia, N. Y.

TO IRON MANUFACTURERS. For Sale.

The Rolling and Puddling Mills of the late Hudson River Iron Co., at Poughkeepsie, N. Y. These mills, with all the land west of the New York Central and Hudson River Railroad tracks and a large river front, are for sale. The Mills are in good condition for immediate occupancy. They contain all the machinery necessary for the manufacture of Merchant Iron, Rail and Bolt Spikes, Bolts, &c., &c. A large portion of the purchase money may remain on the property. Parties in search of this kind of property are invited to examine it, and for other particulars to address W. S. JOHNSTON, Trustee,
Poughkeepsie, N. Y.

Wanted.

A good new or second-hand fish plate punch, strong enough to punch four holes and shear the plate at once. Address with description and price to P. O. BOX 737,
Pottsville, Pa.

Wanted.

A practical business man, who can command \$3000 to \$10,000, to take the place of one retiring, in a Hardware manufacturing Company. To such a party a permanent position will be secured. Will bear investigation. Address, POSITION,
Office of The Iron Age, 83 Reade St., New York.

Wanted.

Situation as traveling salesman with manufacturing or jobbing house of Carriage or Heavy Hardware. Have a practical knowledge of iron and the introduction of goods in above lines, also an acquaintance with the trade throughout the States and Territories. Best references as to character and ability. Address, G. W.,
P. O. Box 85, Providence, R. I.

HEAVY IRON WORKS WANTED.

An Eastern Manufacturing Company, doing a profitable business in heavy wrought iron structures, the manufacture and sale of which they control for the United States and Canada, wish to establish additional works, located with reference to first-class freight advantages for receiving rolled structural and merchant iron, and with reference to geographical location, centering preferably in the regions of Chattanooga, Tenn.; the Mississippi River, between St. Louis, Mo., and Dubuque, Iowa; on the Pacific Coast and Province of Ontario. Parties interested address, WROUGHT IRON, Box 28, Binghamton, N. Y.

To Manufacturers and Hardware Merchants.

WANTED.

By a man of experience in positions of trust, who has a knowledge of the requirements of the export trade in American Hardware, having resided and traveled abroad for business, also held for several years past a responsible position in a manufacturing, a new engagement as office man or travel to solicit trade and establish connections in foreign countries. Address, ENTERPRISE,
Office of The Iron Age, 83 Reade St., N. Y.

Wanted.

Position in an iron works by a party of 25 years' experience, having served as superintendent and finally as president in a well-known rolling mill. Can refer to business firms of highest standing. Does not expect more than fair compensation. Address, T. C. C.,
Louisville Rolling Mill Co.,
Louisville, Ky.

Situation Wanted.

As Amanuensis or Short-hand Writer, Private Secretary, Bookkeeper, &c., by a young man thoroughly qualified to fill any position of trust or responsibility. References first class. Address, SHORT HAND,
Office of The Iron Age, 83 Reade St., New York.

Wanted.

Some Second-hand T Rail, From 16 to 18 lbs. per yard, enough to make 1 mile of track. State condition and price. Address, THEO. B. BASSELIN,
Croghan, Lewis County, N. Y.

Wanted.

A party with good facilities solicits orders for the manufacture of
HARDWARE SPECIALTIES AND NOVELTIES.
Address, 609 Tamarind St., Philadelphia, Pa.

Wanted.

To Manufacture Machinery and Special Tools for the Railway Trade, by an old established firm, with ample facilities.
Address, H. C. A.,
Office of The Iron Age, 220 S. 4th St., Phila., Pa.

Wanted.

Situation wanted by a first-class double-entry bookkeeper, stenographer and clerk of ten years' experience in rolling mill business, and now engaged as such at a rolling mill. Highest testimonials furnished if desired.
Address, VULCAN,
Office of The Iron Age, 83 Reade St., New York.

WANTED.—A Guide Mill Roller; one who can turn rolls. A steady and competent man; must have good references.
Address, ROLLING MILL,
Office of The Iron Age, 83 Reade St., New York.

TO THE HARDWARE TRADE.—An energetic and pushing salesman, well acquainted with hardware dealers, is now open to make arrangements on commission. Address, K. G.,
Office of The Iron Age, 83 Reade St., New York.

Wanted to Purchase.

A HARDWARE STAND.
Address, IRON, Dillsburgh, Pa.

Special Notices.

Wanted.

By an incorporated manufacturing company in the Hardware line, an energetic business man with about \$5000, to take charge of the business outside of the manufacturing department. A good chance to one wishing to grow with the business. The capital is more particularly required to secure the full energy and interest of the party in the business.

Address, J. H. R.,
Office of The Iron Age, 220 S. 4th St., Phila., Pa.

WANTED.—A situation in a wholesale or retail Hardware Store by a young man of five years' experience. Time expires with present employer March 1. Good references furnished from employer and others.

Address, R. L. R.,
Office of The Iron Age, 83 Reade St., N. Y.

New and Second-Hand MACHINERY.

One Horizontal Corlis Engine, 250 h. p.
One Horizontal Engine, 15 1/2 in. x 30 in. Todd & Raftery.
One Horizontal Engine, 9 in. x 12 in. Erie Iron Works.
One Horizontal Engine, 3 in. x 25 in.
One Portable Engine, 5 horse power
Portable Engines from 10 to 25 H. P.
Two Horizontal Return Tub. Boilers, 100 h. p. each.
One Hor. Tubular Boiler, 6 ft. x 14 ft. 6 in. tubes.
Two Hor. Tub. Boilers, 4 1/2 ft. x 13 1/2 ft. 4 1/2 in. tubes.
One Upright Tubular Boiler, 15 H. P.
One Locomotive Steel Boiler, 30 H. P.

MACHINISTS' TOOLS.

One Lathe, 20 in. swing, 10 ft. bed.
One Lathe, 15 in. swing, 6 ft. bed.
One Milling Machine.
One Shaping Machine, 10 in. stroke. Hendy Machine Works.
One Planer, 36 in. x 16 ft. bed. Chain feed.
One Planer, 28 in. x 15 ft. bed. Screw feed.
Ten Bench Lathes.
Two Enslay Drills.
One Travis Boring Mill.
One Merrill Compressed Air Hammer. Hotchkiss patent.
One New Haven Drill in the center of 60 in.
Ten Post Drilling Machines.
One Large Punch for bridge work.
One Hand Punch.
One 30-ton Hydraulic Press and Pump.
Three Vacuum Tanks, 6 ft. x 12 ft.
Six Hardick Pumps.
One Hand-power Paper Cutter.

J. GRAY'S MACHINERY DEPOT,
37 Dey Street, New York, U. S. A.

Illustrated Catalogue OF Hardware, Cutlery, &c.

We have issued a very complete work of this kind, embracing Hardware, Cutlery, Sporting Goods, Housefurnishing Goods, &c.; 1140 pages, with 5493 illustrations, also Lists, Tables, &c., making this book almost invaluable to Hardware Dealers. Price, \$15, sent by mail.

Simmons Hardware Co.,
St. Louis, Mo.

To Railroad Engineers, Im- porters and Others.

DAVID OWEN,
Inspector of Steel and Iron Rails,
Merthyr Tydfil, England.

Undertakes the inspection of Steel and Iron Rails, Permanent Way Materials, &c., &c., in England, Belgium and Germany. Thoroughly practical of many years' experience. Can give very best of references from chief railroad engineers, merchants and others who have employed me to inspect their railroad materials during manufacture and delivery for the last 10 years.

Correspondence solicited. Instructions by mail or cable punctually attended to.

L. SALOMON,
Importer of and dealer in
Upholsterers' Needles, Gilt Nails and
Housefurnishing Hardware.

Agent for the Champion and Standard Knox Fluting Machines.
No. 10 Murray St., New York.

Europe.

Matheson & Grant's
Address is
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sherrie, \$23 @ \$24. A sale is reported of 1000 tons Middlesboro' Forge Iron at \$18.50, here.

Rails.—A sale of 6000 tons Steel Rails at \$61, at mill, is reported. We quote Steel, at mill, \$60 @ \$61. In Iron Rails, at mill, \$58 @ \$59.

to \$200,000, \$600 to \$200,000. In Iron Rails we have not heard of any important business, and we quote the same, \$48 to \$50.

Old Rails.—The demand for Old Rails seems to have tapered off considerably, and the tone of the market is weaker than at our last writing. This state of affairs is difficult to account for, as at say a dollar a ton below holders' views, it is stated that a large business with consumers could be transacted. Buyers' views for Ts are said to be \$27 to \$27.50, while \$28 to \$28.50 is as low as holders will entertain. We quote nominally, Ts and D H, \$28 to \$29.

Scrap.—Considerable business in Wrought Scrap Iron transpired, during the week, sales in lots aggregating 1600 tons being reported at prices ranging from \$10 to \$11.

the latter for prime selected from yard.
We quote No. 1 Wrought from yard, \$30
@ \$31.

METALS.

Copper.—There has been very little doing

during the week, the price paid for Lake Superior being 19 $\frac{3}{4}$ ¢ @ 19 $\frac{1}{2}$ ¢, and for Baltimore, 18 $\frac{3}{4}$ ¢ @ 18 $\frac{3}{4}$ ¢. London cables Chili Bars, £62. 10/ and Best Selected, £69. "London, Feb. 5.—At the early part of the week there was very little business doing in

Week there was very little business doing in this metal, and prices consequently tended in buyers' favor, who during the last day or two have not failed, to some extent, to take advantage of the reduced rates, and a fair number of transactions were carried through on Wednesday in Best Selected, which has given some slight stimulus to the market. However, the trade on the whole keeps in an inanimate condition, much neglected.

and, as regards its statistical condition, has undergone hardly any change since the turn of the year, the total visible stock on the 1st inst. being 60,857 tons, against 60,610 tons on the 1st of January. It is satisfactory to note that the supplies from Chili continue on the whole limited: and although for the last half of January the charters were rather above the average, yet it should not be forgotten that, for the whole of the year, the

below the average, and which has been the case for several months past, and hence the slight increase in those advised on Monday last is not a matter which need give any cause for anxiety. They consisted of 1,400

tons bars and ingots, 450 tons furnace material for England, and 350 tons bars for the continent, making a total of 2200 tons. The bi-monthly returns of Chili produce in first and second hands in Liverpool and Swansea are satisfactory, since they show the stock on the 31st ult. to have been reduced to 31,340 tons, against 32,477 tons on the 13th of the same month, or a decrease of 1137

tons. This reduction is due to the limited imports of the last fortnight of January, which were only 155 tons, whereas the deliveries for the same time were very fair.

liveries for the same time were very fair, amounting to 1202 tons against 650 tons

amounting to 12,922 tons, against 850 tons and 1455 tons respectively for the corresponding period of last year." Manufactures remain as under: Bottoms, 29¢; Braziers, according to size, 28¢ @ 34¢; Circles, 31¢ @ 34¢; Segment Sheets, 31¢; Fire-box Sheets, 28¢; Sheathing, 26¢, and Bolt Copper, 28¢.

Tin.—But little business has transpired during the week. It is, in fact, rather too early to expect much activity, the spring trade not having set in as yet extensively. Singapore and London prices are unchanged. The exports of Tin for February are estimated to be from the Straits to the United States, 150 tons; to England, 300 tons; and from Australia to England, 700 tons; thus

showing a deficit of 750 tons in the supplies compared with February consumption of this country, and a falling off of over 50 1/2 in shipments to England against January. It is to be presumed that these facts will not fail to tell on our prices shortly. The market closes quiet at 20 1/4 @ 20 1/2 for Straits, Australian and Billiton, large lines, and 20 1/4 @ 20 1/2 for English Common. "London, February 5.—The visible stock on the 31st January was 15,208 tons, against 13,584 tons on the 31st December, or an increase of 1624 tons. This increase is not due to any deficiency in the deliveries, for during January they were in excess of what they were in December, being 1607 tons, against 1541 tons in London and Holland, but is to be attributed to the heavy shipments from the Straits, which were 1300 tons, while those from Australia were 925 tons. The market to-day has been active, and numerous transactions are reported at variable rates, closing at £80. 10/ @ £80. 15/." Messrs. Gilliflan, Wood & Co., Singapore.

report through Mr. Charles Nordhaus, 17 Cedar street, New York, that the year's

ships from the Straits to the United States were, in 1880, 144,525 piculs (8650 tons), against 120,216 (7300 tons) in 1879; 68,731 (4140 tons) in 1878, and 60,363 (4204 tons) in 1877. *Tin Plates*.—There is no

change, and we therefore repeat our last week's quotations: Large lots, ordinary brands, per box: Charcoal Bright, \$5.87½ @ \$6.25; ditto Ternes, \$5.25 @ \$5.50; Coke Tin, \$4.50 @ \$5.10, and ditto Ternes, \$4.87½ @ \$5. Considering the season, the jobbing trade is fair. An important feature of the trade for some parts has been that the difference in price between large and jobbing lots is small, parcels being offered at comparatively low rates. Meanwhile considerable supplies are pressed for sale from the other side of the Atlantic, apparently emanat-

ing from second hands, makers being stiff, and holding for higher prices. In Wales occasional lots of Coke are forced upon the market by impecunious holders, which does not prevent the majority of makers from maintaining the firm attitude alluded to above, many of them insisting upon 16/- on account of increased cost, although occasional lots are sold at 15/-.

Lead.—Consumers of Domestic Lead have bought on favorable offerings about 400 tons of Foreign Lead, and more of it is in negotiation. The experiment of last year is to be repeated, apparently, when a large import

tation depressed prices for nearly six months over the time that the imported surplus was worked off. Prices here are easier, although sellers nominally quote high, \$4.00 being the asking price, and sales trifling only. Refined remains at 5 1/4¢. "London, February 5.—This market continues dull, and notwithstanding that orders are scarce, the demand limited, and without any perceptible symptoms of improvement, yet prices are for the most part well sustained, and although the market is perhaps somewhat depressed by importers of Spanish being rather free sellers, yet quotations have not been materially affected." Manufacturers are quoted as follows: Sheet Lead, 7 1/2¢; Lead Pipe, 6 1/2¢; Tin-lined ditto, 15¢, and Block Tin Pipe, 40¢.

Splinter and Zinc.—Nothing has been done in either Common Domestic or foreign. We quote the former, nominally, 5 1/4¢ @ 5 1/2¢, and Silesian 5 1/2¢. In Europe the cable informs us a pretty firm tone is upheld, without any change in quotations. "London, Feb. 5.—Quietude continues to characterize this market, and prices, although not having undergone any marked change, nevertheless show signs of ease. The Indian demand for both Silesian and English keeps particularly slack."

Antimony.—The market remains inactive upon the basis of 14 1/2¢ for Hallet's and 15¢ for Cookson's brand.

EXPORTS

Of Hardware, Iron, Steel and Metals into the Port of New York, for the Week ending February 22, 1881:

Dutch West Indies.	Alexandria.
Sew. ma., cs., 4	Quan. Val.
Tinware, cs., 3	85.56
Nails, kegs., 124	94
Per. caps, cs., 3	75
Mf. iron, pkgs., 12	24
Powder, lbs., 3750	400
Ptm., gals., 6009	745
Met. sheath, cs., 123	123
Revolvers, cs., 6	65
Mf. cop'r case, 1	35
Hdw., cs., 54	758
Pumps, pkgs., 1	39
Ptm., gals., 290,750	35,730
Dutch East Indies.	Constantinople.
R. R. wheels, 40	100
Mf. iron, pkgs., 1	46
Hdw., cs., 39	600
Ag. imp., pkgs., 3	175
Ptm., gals., 749,920	67,780
Hamburg.	Trieste.
Nails, kegs., 70	318
Sew. ma., cs., 439	4,543
Mach'y, cs., 12	1,298
Clocks, bxs., 107	1,894
Nails, pkgs., 6	95
Hdw., cs., 100	867
En. wheels, cs., 2	128
Ag. imp., pkgs., 10	460
I. R. goods, cs., 3	153
Copenhagen.	United States of Columbia.
Clocks, bxs., 2	44
Hdw., cs., 1	235
Liverpool.	United States of Columbia.
Clocks, bxs., 174	3,002
Mach'y, cs., 6	650
Ptm., gals., 449,050	42,038
Pistols, cs., 3	600
Hdw., cs., 3,929	3,929
Ag. imp., pkgs., 16	160
Brass gds, cs., 1	16
Mf. iron, pkgs., 2	140
I. R. goods, bxs., 2	140
Bristol.	French West Indies.
Clocks, cs., 7	238
Sancti.	Alentejo.
Ptm., gals., 43,506	4,072
Nphtha, gals., 39,481	4,348
Cuba.	British North American Colonies.
Hdw., cs., 81	1,703
R. R. mtl. pgs., 674	2,100
Nails, kegs., 308	1,080
Clocks, cs., 52	52
Sew. ma., cs., 36	475
R. R. cars, 30	3,000
Cutlery, cs., 4	45
Ag. imp., pkgs., 21	840
Mach'y, pkgs., 145	3,450
Nails, cs., 8	138
I. R. goods, cs., 6	395
Mf. iron, pkgs., 731	4,468
Ptm., gals., 5,520	725
Iron safe, 1	215
Locomotive, 1	11,720
R. R. bridge, 1	7,000
Porto Rico.	British Guiana.
Ptm., gals., 1,000	330
Japan.	Hayti.
Ptm., gals., 405,000	59,400
Chili.	Bremen.
Hdw., cs., 139	3,278
Ag. imp., pkgs., 50	864
Mf. iron, pkgs., 13	80
Grindstones, 48	18
Nails, kegs., 1,110	3,420
Ptm., gals., 26,000	3,270
Clocks, bxs., 31	551
Pumps, pkgs., 4	354
Sew. ma., cs., 200	950
Nails, bxs., 60	300
Mf. iron, pkgs., 67	560
Brazil.	Amsterdam.
Ptm., gals., 103,304	12,037
Iron, cs., 325	2,820
Nails, kegs., 90	390
Mf. iron, pkgs., 410	3,568
Barrows, 150	180
Sew. ma., cs., 41	660
Ruffs, cs., 41	590
Cutlery, cs., 16	778
Pumps, pkgs., 8	450
Tinware, cs., 15	535
Hdw., pkgs., 120	1,703
Ag. imp., pkgs., 8	140
Revolvers, cs., 1	375
Tacks, cs., 3	185
Mach'y, cs., 2	127
Ecuador.	Hull.
Iron, pkgs., 483	734
Nails, bxs., 27	153
Tinware, cs., 13	445
Clocks, bxs., 7	210
Shot, pkgs., 2	261
Nails, kegs., 22	76
Mf. iron, pkgs., 57	447
Hdw., cs., 59	502
Ptm., gals., 5,002	621
Iron safe, 6	270
Revolvers, cs., 2	210
Lisbon.	Glasgow.
Ptm., gals., 181,754	18,122
Argentine Republic.	Bordeaux.
Sanitary, cs., 41	955
Ptm., gals., 60,000	7,275
Tacks, cs., 3	38
Sew. ma., cs., 210	3,760
Tinware, cs., 1	30
Hdw., pkgs., 922	25,210
Clocks, bxs., 13	925
Ag. imp., pkgs., 971	15,916
Mf. iron, pkgs., 13	612
Nails, kegs., 7	23

IMPORTS

Of Hardware, Iron, Steel and Metals into the Port of New York, for the Week ending February 22, 1881:

Hardware.	Baring Bros. & Co.
Baker H. & Co.	Pig, tons, 220
Pigs, & cases, 208	Colington T. R. & Co.
Raw & Dotter,	Sheet iron, bbls., 472
Cases, 6	Sheet iron, bxs., 44
Bloomfield J. C. & Co.	Drexel, Morgan & Co.
Mach'y, cs., 2	Ore, tons, 502
Mach'y, pkgs., 6	Hattersley J. & Bro.
Curry, cs., 12	Wire rope, reel, 1
Drexel, Morgan & Co.	Morrel W. D.
Arms, cs., 2	Ore, tons, 502
Downing, Sheldon & Co.	Milliken & Smith,
Case, 1	Wire, bbls., 1220
Cask, 1	Mason J. W.
Degraw, Aymar & Co.	Wire rope, coils, 104
Chain, lengths, 5	Prosser Thos. & Sons,
Chain, cks., 2	Wrought iron tubes,
Folsom H. & D.	bbls., 12
Arms, cs., 6	Whitney A. R.
Field A. & Co.	Sheet iron, bbls., 257
Casks, 36	Sheet iron, bxs., 14
Case, 1	Order,
Pigs, 3	Ore, tons, 4266
Graef Cutlery Co.	Old rails, 703
Cutlery, cs., 12	Specular, 1st
Greyson, McCulloch & Co.	Wire, cks., 5
Mach'y, cs., 2	Pig, tons, 490
Hartley & Graham,	Pig, bars, 14,832
Pigs, 1	Pig, bbls., 100
Howard, Bro. & Read,	Steel.
Pigs, 6	Abbott Jere & Co.
Hildick A. H.	Cases, 133
Chains, 10	Brown Wm.
Chains, cks., 43	Pigs, 2
Shears, cks., 3	Bundles, 271
King, Briggs & Co.	Brow, Shipley & Co.
Case, 1	Bessmer blooms, 361
McCoy & Saunders,	Drexel, Morgan & Co.
Casks, 2	Blooms, 212
Merchants' Dispatch Co.	Mayer, Strouse & Co.
Arms, cs., 10	Casks, 54
Pomares & Cushman,	Order,
Mach'y, cs., 99	Old wagon and carriage apr. steel, 10
Rosenthal J. & Co.	Old railway leaf spr. steel, 10
Case, 1	Old spring steel, 10
Schoverling, Daly & Gale,	Old leaf spring steel, 10
Arms, cs., 39	Old leaf spring steel, 10
Strutler, Lau & Co.	Old leaf spring steel, 10
Boxes,	Old leaf spring steel, 10
Thompson John,	Old leaf spring steel, 10
Case, 1	Old leaf spring steel, 10
Taber H. M.	Old leaf spring steel, 10
Pigs, 71	Old leaf spring steel, 10
Baring Bros. & Co.	Old leaf spring steel, 10
Tin plates, bxs., 267	Old leaf spring steel, 10
Dickerson, Van Dusen	Old leaf spring steel, 10
Co.	Old leaf spring steel, 10
Tin plates, bxs., 491	Old leaf spring steel, 10
Drexel, Morgan & Co.	Old leaf spring steel, 10
Tin plates, bxs., 427	Old leaf spring steel, 10
Lamarche H.	Old leaf spring steel, 10
Roller zinc, cks., 90	Old leaf spring steel, 10
Pigs, 47	Old leaf spring steel, 10
Cases, 10	Old leaf spring steel, 10
Mach'y, cs., 10	Old leaf spring steel, 10
Anvils, 4	Old leaf spring steel, 10
Razor stones, cs., 20	Old leaf spring steel, 10
Files, cks., 4	Old leaf spring steel, 10
Iron.	Old leaf spring steel, 10
Brown Bros. & Co.	Old leaf spring steel, 10
Ore, tons, 304	Old leaf spring steel, 10
Ore, bbls., 420	Old leaf spring steel, 10
COAL.	Old leaf spring steel, 10

The prices current for Rags, &c., are as follows:

Canvas, Linen	1 1/2¢ @ 4 c.
White Cotton, New	1 1/2¢ @ 4 c.
No. 2	1 1/2¢ @ 4 c.
No. 3	1 1/2¢ @ 4 c.
No. 4	1 1/2¢ @ 4 c.
No. 5	1 1/2¢ @ 4 c.
No. 6	1 1/2¢ @ 4 c.
No. 7	1 1/2¢ @ 4 c.
No. 8	1 1/2¢ @ 4 c.
No. 9	1 1/2¢ @ 4 c.
No. 10	1 1/2¢ @ 4 c.
No. 11	1 1/2¢ @ 4 c.
No. 12	1 1/2¢ @ 4 c.
No. 13	1 1/2¢ @ 4 c.
No. 14	1 1/2¢ @ 4 c.
No. 15	1 1/2¢ @ 4 c.
No. 16	1 1/2¢ @ 4 c.
No. 17	1 1/2¢ @ 4 c.
No. 18	1 1/2¢ @ 4 c.
No. 19	1 1/2¢ @ 4 c.
No. 20	1 1/2¢ @ 4 c.
No. 21	1 1/2¢ @ 4 c.
No. 22	1 1/2¢ @ 4 c.
No. 23	1 1/2¢ @ 4 c.
No. 24	1 1/2¢ @ 4 c.
No. 25	1 1/2¢ @ 4 c.
No. 26	1 1/2¢ @ 4 c.
No. 27	1 1/2¢ @ 4 c.
No. 28	1 1/2¢ @ 4 c.
No. 29	1 1/2¢ @ 4 c.
No. 30	1 1/2¢ @ 4 c.
No. 31	1 1/2¢ @ 4 c.
No. 32	1 1/2¢ @ 4 c.
No. 33	1 1/2¢ @ 4 c.
No. 34	1 1/2¢ @ 4 c.
No. 35	1 1/2¢ @ 4 c.
No. 36	1 1/2¢ @ 4 c.
No. 37	1 1/2¢ @ 4 c.
No. 38	1 1/2¢ @ 4 c.
No. 39	1 1/2¢ @ 4 c.
No. 40	1 1/2¢ @ 4 c.
No. 41	1 1/2¢ @ 4 c.
No. 42	1 1/2¢ @ 4 c.
No. 43	1 1/2¢ @ 4 c.
No. 44	1 1/2¢ @ 4 c.
No. 45	1 1/2¢ @ 4 c.
No. 46	1 1/2¢ @ 4 c.
No. 47	1 1/2¢ @ 4 c.
No. 48	1 1/2¢ @ 4 c.
No. 49	1 1/2¢ @ 4 c.
No. 50	1 1/2¢ @ 4 c.
No. 51	1 1/2¢ @ 4 c.
No. 52	1 1/2¢ @ 4 c.
No. 53	1 1/2¢ @ 4 c.
No. 54	1 1/2¢ @ 4 c.
No. 55	1 1/2¢ @ 4 c.
No. 56	1 1/2¢ @ 4 c.
No. 57	1 1/2¢ @ 4 c.
No. 58	1 1/2¢ @ 4 c.
No. 59	1 1/2¢ @ 4 c.
No. 60	1 1/2¢ @ 4 c.
No. 61	1 1/2¢ @ 4 c.
No. 62	1 1/2¢ @ 4 c.
No. 63	1 1/2¢ @ 4 c.
No. 64	1 1/2¢ @ 4 c.
No. 65	1 1/2¢ @ 4 c.
No. 66	1 1/2¢ @ 4 c.
No. 67	1 1/2¢ @ 4 c.
No. 68	1 1/2¢ @ 4 c.
No. 69	1 1/2¢ @ 4 c.
No. 70	1 1/2¢ @ 4 c.
No. 71	1 1/2¢ @ 4 c.
No. 72	1 1/2¢ @ 4 c.
No. 73	1 1/2¢ @ 4 c.
No. 74	1 1/2¢ @ 4 c.
No. 75	1 1/2¢ @ 4 c.
No. 76	1 1/2¢ @ 4 c.
No. 77	1 1/2¢ @ 4 c.
No. 78	1 1/2¢ @ 4 c.
No. 79	1 1/2¢ @ 4 c.
No. 80	1 1/2¢ @ 4 c.
No. 81	1 1/2¢ @ 4 c.
No. 82	1 1/2¢ @ 4 c.
No. 83	1 1/2¢ @ 4 c.
No. 84	1 1/2¢ @ 4 c.
No. 85	1 1/2¢ @ 4 c.
No. 86	1 1/2¢ @ 4 c.
No. 87	1 1/2¢ @ 4 c.
No. 88	1 1/2¢ @ 4 c.
No. 89	1 1/2¢ @ 4 c.
No. 90	1 1/2¢ @ 4 c.
No. 91	1 1/2¢ @ 4 c.
No. 92	1 1/2¢ @ 4 c.
No. 93	1 1/2¢ @ 4 c.
No. 94	1 1/2¢ @ 4 c.
No. 95	1 1/2¢ @ 4 c.
No. 96	1 1/2¢ @ 4 c.
No. 97	1 1/2¢ @ 4 c.
No. 98	1 1/2¢ @ 4 c.
No. 99	1 1/2¢ @ 4 c.
No. 100	1 1/2¢ @ 4 c.

PHILADELPHIA.

Office of The Iron Age, 220 South Fourth St., PHILADELPHIA, Feb. 22, 1881.

Pig Iron.—The market may again be quoted quiet and unchanged, although prices are firmly maintained, and in some descriptions are a shade dearer. The weak and unsettled condition of Old Rails and Bessemer Iron has caused some uneasiness, and for the time being will probably check any tendency toward an advance. There is no weakness in Anthracite Irons, however, and no likelihood of a decline. The flurry in the articles mentioned will probably be over in a few days, and it would not be surprising to see another upward movement as soon as buyers take hold again. The market was very thoroughly discussed last week at the convention of stove founders, held in Detroit, and the report of the Committee on Prices of Iron is especially worthy of perusal (see page 3). Sales during the week have been moderate in amount and at the full rates recently current. No. 1 Foundry is steady at \$24.50 @ \$26, the heaviest transactions being at \$25 @ \$25.50. The tendency is toward higher figures, and a very slight increase in the demand will probably lift prices to \$26 firm. Inquiries are numerous, and if the outcome results in the usual amount of business, \$25 will probably have to be omitted from our quotations in course of a week or two. No. 2 Foundry is steady at \$22 @ \$23, but no sales of importance are reported. In one or two cases \$21.50 has been accepted for odd lots. Mill Irons are firm, but prices vary considerably. Standard brands are strongly held at \$21.50 @ \$22.50, but a good many lots changed hands at \$20 @ \$21, according to circumstances. Unknown brands and odd lots have to be sold at much lower figures than can be obtained for standard brands. We mention this to explain the apparent discrepancy in prices. Consumers cannot be induced to venture on unknown brands unless special inducements are offered in prices. Charcoal Iron is unchanged at last week's prices.

Foreign Iron.—Scotch is in limited supply, and only saleable in a retail way. Eglington at \$22 @ \$22.50; Gartsherrie at \$24.50 @ \$25. English Iron offered at \$18 @ \$20, no sales of any magnitude of recent date.

Bessemer Iron.—The market is very unsettled, and prices decidedly lower. Sales were made very recently of large blocks at \$27 @ \$27.25. Last week 10,000 tons were sold at a fraction over \$26, and to-day offers of \$26 are anxiously sought for. It is likely that the success of the dephosphorizing process is affecting this grade of Iron.

Muck Bar.—The market shows no improvement, and sales are difficult to effect unless at concessions, although a sale was reported of 500 tons yesterday at \$38 at mill.

Bar Iron.—There are indications of improvement, although prices remain a trifle off from the card rate. There is more demand, however, and as the mills have a moderate amount of work on hand, they are less disposed to grant concessions than they were during the early part of the month. The general outlook is favorable, and it is more than likely that consumers will find it difficult to place orders after this month, unless at the full card rate. An order for 500 tons was taken yesterday at an advance of a twentieth as compared with the week previous, and the tone of the market, although quiet, is decidedly firm. The demand for small lots from store is very good, and as consumers are steadily using up large quantities of iron, the expectation of better prices appears to be well founded.

Structural Iron.—In this department there is not much change, and the outcome during the past week is not very satisfactory. As we have said before, there are plenty of orders in a small way, but not sufficient in the aggregate to give full employment to the mills, so that work is running short in some establishments. There has been nothing given out during the week, except 700 to 800 tons beams, girders, &c., for the public buildings through J. F. Bailey & Co. The demand from the shipyards is fair, the consumption in this direction being larger and more general than it has been for a long time past. Bridge building is comparatively quiet, but a heavy demand is looked for in course of the next three or four months. Prices are nominally unchanged at 2.6¢ for Angles; 2.8¢ for Beams, and 3¢ @ 3.1¢ for Channels and Tees; desirable orders could probably be placed on somewhat better terms.

Plate and Tank Iron.—There is a slightly better feeling, but we cannot find any general improvement in prices. Some of the mills appear to have more work than they had a week or two ago, and it is likely that orders have been obtained outside of this market. The demand is languid, and transactions have been very much of a retail character. Prices are irregular and difficult to quote with any exactness, but for small lots the following are about an average, say: Tank Iron, 2.75¢; C. No. 1, 3.2¢; C. No. 1, 3.4¢; Flange Iron, 4 1/2¢ @ 4 3/4¢; Fire Box, 5 1/2¢ @ 5 3/4¢.

Sheet Iron.—The demand shows no abatement, and manufacturers have as much business offered as they can attend to. Orders, both for spot and spring delivery, are coming in daily and prospects are entirely satisfactory. The mills are running full time and can barely keep up with the demand. Retail lots are unchanged and may be quoted as follows:

Common Sheet, No. 26 to 28	4 1/2¢
Common Sheet, No. 28 to 30	4 3/4¢
Common Sheet, No. 30 to 32	4 1/2¢
Common Sheet, No. 32 to 34	4 3/4¢
Common Sheet, No. 34 to 36	4 1/2¢
Common Sheet, No. 36 to 38	4 3/4¢
Common Sheet, No. 38 to 40	4 1/2¢
Common Sheet, No. 40 to 42	4 3/4¢
Common Sheet, No. 42 to 44	4 1/2¢
Common Sheet, No. 44 to 46	4 3/4¢
Common Sheet, No. 46 to 48	4 1/2¢
Common Sheet, No. 48 to 50	4 3/4¢
Common Sheet, No. 50 to 52	4 1/2¢
Common Sheet, No. 52 to 54	4 3/4¢
Common Sheet, No. 54 to 56	4 1/2¢
Common Sheet, No. 56 to 58	4 3/4¢
Common Sheet, No. 58 to 60	4 1/2¢
Common Sheet, No. 60 to 62	4 3/4¢
Common Sheet, No. 62 to 64	4 1/2¢
Common Sheet, No. 64 to 66	4 3/4¢
Common Sheet, No. 66 to 68	4 1/2¢
Common Sheet, No. 68 to 70	4 3/4¢
Common Sheet, No. 70 to 72	4 1/2¢
Common Sheet, No. 72 to 74	4 3/4¢
Common Sheet, No. 74 to 76	4 1/2¢
Common Sheet, No. 76 to 78	4 3/4¢
Common Sheet, No. 78 to 80	4 1/2¢
Common Sheet, No. 80 to 82	4 3/4¢
Common Sheet, No. 82 to 84	4 1/2¢
Common Sheet, No. 84 to 86	4 3/4¢
Common Sheet, No. 86 to 88	4 1/2¢
Common Sheet, No. 88 to 90	4 3/4¢
Common Sheet, No. 90 to 92	4 1/2¢
Common Sheet, No. 92 to 94	4 3/4¢
Common Sheet, No. 94 to 96	4 1/2¢</

and prices remain unchanged. For the better grades of Iron there is a disposition on the part of holders to demand higher figures than those now ruling. A prominent broker and dealer in Lake Superior Irons states that the furnaces he represents are all sold up on Lake Superior Iron, and that he had an order for 3000 tons of the same, 1500 tons of which he has placed, but at time of writing had not succeeded in placing the balance, indicating that the demand for this class of Iron is good. We quote: Lake Superior Charcoal Nos. 1 and 2, \$32; No. 3, \$33; Nos. 4, 5 and 6, \$34; Scotch Imported (according to brand), \$27.50 @ \$29; Scotch American (according to brand), \$27 @ \$29; Anthracite, \$24 @ \$26; Coke, \$25 @ \$27; Silvery (soft), \$24 @ \$26.

Rails.—The tone of the market as regards Steel Rails is strong, and the demand good. We are unable to give quotations for early delivery, as mills are sold largely ahead. For future delivery we quote \$63 @ \$64. The demand for Iron Rails continues fair. We quote, according to specifications, \$50 @ \$55.

Manufactured Iron.—Since the opening of the railroads, which were to a certain extent blockaded on account of the snow storms prevailing during the early part of the week, the demand for Manufactured Iron has improved considerably, with a fair number of inquiries. We quote: Bar Iron at \$2.50 for ordinary orders and \$2.40 for car-load lots. Sheet Iron, from 10 to 14 gauge, at \$3.40, and \$3.30 for large quantities. Hoop Iron, \$3.20 @ \$3.30.

Nails.—The condition of the market is unchanged since our last writing. We quote 10d to 60d, \$3 per keg, with the usual allowance for large orders and 2% discount for cash.

Steel.—The demand for Tool, Machinery and Steel for Agricultural purposes is satisfactory, and the following quotations fairly represent holders' views: Tool, 12¢; Machinery (open hearth), 6¢; Crucible Machinery, 7¢; Hammer (Cast), 2 inches and under, 9¢; over 2 inches, 10¢; Cast Spring, 7¢; open-hearth Spring, Tire and Sleigh Shoe, 5¢. In large lots these prices would be shaded.

Scrap Iron.—The market for Scrap Iron is somewhat easier than it has been, but prices remain unchanged. We quote: Forge Scrap, \$30 @ \$32; No. 1 Wrought, \$27 @ \$29; Heavy Cast, \$24 @ \$25; Stove Plate, \$17 @ \$18.

CHATTANOOGA.

Office of The Iron Age, Market and 8th Sts.,
CHATTANOOGA, Feb. 21, 1881.

Business is better in this district than usual in February. Manufacturing concerns of all kinds are full of work, and their business promising a very early and lively opening of the spring trade. The furnaces are all pushing up their products by increased blast and other appliances, and still there is no perceptible accumulation of stocks in any grade, indicating that the demand is keeping the market in a healthy condition. The weather for the most part of this month has been no improvement on that of January. This week closes more favorably.

Pig Iron.—Prices of Pig continue very steady. Foundry grades are scarce, with a tendency to higher rates. We quote: No. 1 Foundry, \$25 @ \$27; No. 2 Foundry, \$23 @ \$25; Gray Forge, \$20 @ \$22; White and Mottled, \$18 @ \$20; Car Wheel Metal, \$38 @ \$40.

Miscellaneous Articles.—The supply of Old Rails continues steady and the demand holds prices at the last quotations. There is a probability that Old Rails and Scraps may command better prices later in the year. The high price of Mill Irons in 1879-80 brought to market every bit of available Scrap, and should there be another advance in metal the greater demand for Scrap in all forms will be improved. We quote Old Rails at \$26 @ \$28; Wrought Scrap, \$20 @ \$24; Cast, \$15 @ \$17; Old Wheels, \$25 @ \$30.

Ores.—We quote: 50% Brown Hematite, per ton, \$2 @ \$2.75; Red Fossil, \$2 @ \$2.25.

Nails.—This is the dull season for Nails, and still the demand is regarded by dealers as very fair, indicating a better business in the spring. We quote at \$3.25 rates; usual discount on car-load lots and for cash.

Manufactured Iron.—The improved feeling in the Bar Iron market noted in our last issue has disappeared, and the movement is dull. We quote Bar at \$2.35, and weak; Railroad Spikes, \$3; Track Bolts, \$4; Trestle Bolts, \$4.50; Fish Plate, \$2.50. All the articles in this list have a firm market, with an advancing tendency.

Coal.—The rate for Lump in retail lots is \$5 per ton. The soft weather of the past week or two has somewhat modified the high rates in the Southern cities. Manufacturers will hardly be able to renew their old contracts in any instance. The rate will probably be \$2 @ \$2.50 per ton for run of mine at mills.

Coke.—Furnace Coke, \$3 per ton at furnace; Foundry, 10¢ @ 12¢ per bushel.

Steel and Iron Rails.—The mill here is busy on Steel orders. There are no changes in rates except in Iron Bars, which tend sharply to advance.

Lead.—We quote: Pig Lead, 4 1/2¢ @ 5¢.

Steel.—There is a light supply of Steel in all forms in this market, and prices rule stiff. We quote: Plow Slabs, 3-inch and under, \$4.70; Black Diamond, ordinary sizes, 13¢.

BOSTON.

FEBRUARY 19.—The market for raw Iron continues but moderately active and prices are unchanged. The consumption of Iron during the present year promises to be large, but consumers have an idea that supplies will be sufficient for all their requirements. Hence, furnace and mill men here in the East are buying only for present wants. We quote American Pig Iron at \$25 @ \$26 for No. 1 X; \$22 @ \$23 for No. 2 X, and \$20 @ \$21 for Gray Forge. These

prices are f. o. b. at the port of shipment. Small spot lots will command \$2 per ton higher. Foreign Iron shows a duller and weaker tone, and though our quotations are nominally unchanged, there is a disposition to yield concessions of 50¢ @ \$1 per ton. We quote: Langlois, \$24 @ \$25; Glengarnock and Gartsherrie, \$23 @ \$24; Eglinton and Carnbroe, \$22 @ \$22.50, and Middleshoro', \$18 @ \$19 for No. 3 and \$20 for No. 1. Old Rails have been slow of sale, and holders have shown a disposition to recede slightly from the highest prices lately quoted. We quote American at \$33, and foreign at \$28.50 @ \$30. Manufactured Iron is in fair demand and firm at \$2.30 for Refined Bars. There is no change in Plates, and we continue to quote: \$2.90 @ \$3 for Common and Tank; \$3.20 @ \$3.37 1/2 for C. No. 1; \$3.50 @ \$3.62 1/2 for C. H. No. 1 Shell; and \$4.62 1/2 @ \$4.75 for C. H. No. 1 Flange; and 6 1/4¢ for Bay State X Flange for fire-boxes, &c. Norway and Swedish are quoted at \$3.75 per cwt. for Bars, and \$4.75 for Shapes. Nails are quiet at \$2.90 per keg, net. Copper is quiet, but firm, 19 1/2¢ @ 19 3/4¢ for round lots of Lake, and 18 1/2¢ @ 18 3/4¢ for Baltimore. The Boston store price is 19 1/2¢ for Lake and 18 1/2¢ @ 19¢ for Baltimore. There has been no change in the combination prices of Manufactured Copper. We quote: New Sheathing Copper, 26¢; Braziers', 25¢; and Bolts, 28¢; Bottoms, 31¢; American Yellow Sheathing Metal, 17¢ @ 18¢; Yellow Metal Bolts, 20¢; and English Yellow Metal Sheathing, 14¢, in bond. Lead has been moderately active and steady at 4.95¢ for car-load lots delivered in Boston. Store lots command 5¢ @ 5 1/2¢ for Western and 4 1/2¢ for remelted. The prices of manufactures are unchanged, as follows: Bar, 6 1/2¢; Pipe, 6 1/2¢; Sheet, 7¢; Tin-lined Pipe, 15¢; Tin Pipe, 40¢, all less 10% to the trade. No. 1 Solder, 11 1/2¢. Spelter is in fair demand and firm at 5 1/2¢ @ 5 3/4¢ for Western and 4 1/2¢ @ 5¢ for remelted. Sheet Zinc is quiet at 7¢ @ 7 1/4¢. Tin has shown scarcely any change since our last report, and we continue to quote Straits and English at 20¢ @ 20 1/2¢, according to quantity. Tin Plates are easier, but unchanged, and we continue to quote good-sized lots, ordinary brands, per box, as follows: We quote large lines, ordinary brands, per box: Charcoal Bright, \$6 @ \$6.25; do. Ternes, \$5.37 1/2; Coke Tin, \$4.90 @ \$5, and do. Ternes, \$4.87 1/2 @ \$5.—Commercial Bulletin.

CINCINNATI.

FEBRUARY 21.—Pig Iron.—The past week has been one of increased activity. The demands of consumers have been readily met, and at prices about as quoted a week ago. The opening of river navigation has materially increased the already ample supply. Some of the makers and holders, being anxious to realize on their stocks, have accepted figures that have not been reported. The following are the quotations for the week:

Hanging Rock Charcoal Foundry	\$25.50 @ 27.00
" " and other Coke Foundry	24.00 @ 25.00
" " Stonecoal	21.00 @ 23.00
Coke and Bar-coal Forge	35.00 @ 38.00
Coke and Bar-coal Forge	30.00 @ 32.50
Silver Gray Softeners	20.00 @ 21.50
Wrought Scrap, per 100 lb.	1.00 @ 1.40
Cast, per 100 lb.	.50 @ .80
Old Rails, per ton	25.50 @ 30.00
Old Wheels	31.00 @ 33.00
Bar Iron, card rate	2.15 @ 2.30

LOUISVILLE.

Messrs. GEO. H. HULL & CO., Commission Merchants, report to us as follows, under date of February 18: The last week has witnessed considerable activity in the Iron market, with some large sales, principally Mill and No. 2 Foundry, although prices are a shade lower on some inferior brands. The demand for Cold-blast is still very light, but so far as sales indicate, prices are unchanged. We quote for cash as follows:

No. 1 Hanging Rock, Charcoal	\$27.00 @ 28.00
No. 2 Southern, Charcoal	26.00 @ 27.00
No. 3 Hanging Rock, Stonecoal and Coke	23.50 @ 24.00
No. 4 Hanging Rock, Stonecoal and Coke	23.50 @ 24.00
No. 5 Southern, Stonecoal and Coke	23.50 @ 24.00
No. 6 "American Scotch"	23.00 @ 24.00
Silver Gray	19.00 @ 20.00
Scotch	17.00 @ 18.00

No. 1 Charcoal, Cold-short and Neutral	\$22.00 @ 24.00
No. 2 Stonecoal and Coke, Cold-short and Neutral	21.50 @ 22.00
No. 3 Stonecoal and Coke, Cold-short and Neutral	20.50 @ 21.50
No. 4 Missouri and Indiana Red-short	26.00 @ 27.00
White and Mottled, Cold-short and Neutral	19.00 @ 20.00

Hanging Rock, Cold-blast	35.00 @ 42.00
Alabama and Georgia, Cold-blast	35.00 @ 40.00
Kentucky, Cold-blast	35.00 @ 40.00

W. B. BELKNAP & CO., Iron and Steel Merchants, Nos. 113 and 115 Main street, report to us as follows, under date of February 19: Business still much impeded by unpropitious weather, extreme cold and wet alternating, which renders building or outdoor construction of any kind impossible. Bar Iron, however, is very firm, and an advance of \$1 per ton may be quoted. Sheet about stationary, possibly a slight weakness in the light numbers, as the season is well over. Hoop is in good demand and prices steady. Nails are being sold rather more largely than immediate consumption would warrant, on promise of an advance at the next meeting. This is always an unhealthy procedure, and one that is to be deprecated. An advance made to "stimulate trade," as the expression is, is sure to reach. Such mills as did not book enough orders to keep them at work, are apt to feel aggrieved and take their revenge out in quiet cuts to their favorite customers or others on whom they can unload, and the last estate of the market is worse than the first. A healthy advance comes surely, based on large inquiries for immediate delivery, the article wanted for actual use at the time. Resolutions to boost up the price and maintain it, "with the jobbers' help," are worth nothing when the test of competition is applied.

ST. LOUIS.

Messrs. HOFFER, PLUMB & CO., Pig Iron and Iron Ore Merchants, 417 Pine street,

write us as follows, under date of February 19: The demand for Iron of all grades in small lots is very good, and prices remain firm. For cash we quote:

Missouri, No. 1	\$28.00 @ 29.00
Southern, No. 1	27.00 @ 28.00
Hanging Rock No. 1	28.00 @ 29.00

Missouri, No. 1	none offering.
Southern, No. 1	25.00 @ 26.00
Ohio No. 1	25.00 @ 26.00

Cold-short	23.00 @ 24.00
Red-short	26.00 @ 27.00

Missouri	30.00 @ 35.00
Southern	35.00 @ 38.00
Ohio	35.00 @ 43.00

R. L. COLEMAN & BRO., Fourth and Pine streets, write us as follows under date of February 19: We note this week several inquiries for large lots of Mill Iron, some of them being from foundries desiring to use this grade of Iron in place of Scrap, which is now scarce and relatively higher than Pig; and this change of material, if generally carried out, cannot fail to add largely to the consumption of Pig Iron, and in all probability enhance the value of at least mill grades. The general demand is fair, with prices firm. We quote for cash, f. o. b. here:

Hanging Rock Charcoal No. 1	\$29.00 @ 30.00
" " Coke and Stonecoal	25.00 @ 26.00
No. 1 Hanging Rock Coke and Stonecoal	25.00 @ 25.00
Southern Charcoal and Coke No. 1	25.50 @ 27.00
Missouri " " No. 1	26.00 @ 27.00
Silver Gray	22.50 @ 23.00

No. 1 Cold-Short and Neutral	22.50 @ 23.50
No. 1 Red-Short	25.00 @ 26.00

Hanging Rock Cold Blast	42.00 @ 44.00
Warin Blast	35.00 @ 38.00
Lake Superior	35.00 @ 38.00
Southern	35.00 @ 40.00

CLEVELAND.

FEBRUARY 21.—Pig Iron.—The market continues without material change. Demand active, but no advance in prices. There is nothing special to report this week, except, perhaps, that there is a continued demand for spot lots of ore, and these are being taken up, so that the quantity unsold is gradually being diminished; and, although we do not think there will be an ore famine, we believe that the opening of navigation will find ores all disposed of and none to carry over unsold. Fix ores are being taken up at advanced prices, so that there is but little in the market. There is considerable inquiry for ore for next season, with quite an aggregate of sales booked by the various companies. Especially is this the case with Steel ores, but it is not confined to them. Ore of good repute for general iron purposes are now being sought after, and sales are being closed.

Ressemer Speculars and Magnetites	\$5.00 @ \$10.00
Ressemer Hematites	7.00 @ 9.00
Memorine Range Ores	7.50 @ 9.00

Speculars and Magnetites	8.00 @ 10.00
Hematites	6.50 @ 8.00

RICHMOND.

Mr. ASA SNYDER, Iron Merchant and Furnace Agent, writes as follows under date of February 21: Last week's quotations are fully maintained. Sales active and foot up a large amount, although no extensive orders are given for future delivery.

Scotch Pig Iron	\$24.00 @ 27.00
American Scotch Pig Iron	27.00 @ 29.00
No. 1	25.00 @ 26.00
No. 2	22.00 @ 25.00
No. 3	21.00 @ 23.00
Mottled and White	18.00 @ 21.00
Virginia Charcoal C. B. Wheel Iron	38.00 @ 41.00
Old Rails	26.00 @ 28.00
Old Wheels	28.00 @ 30.00
Wrought Scrap, No. 1	22.00 @ 25.00
Cast Machinery Scrap Steel	21.00 @ 22.00
Richmond Refined Bar Iron	2.6
Horse Shoes, Reddegar	4.00
Mule	5.00

BALTIMORE.

W. N. WYETH, Iron and Steel Merchant, 16 and 48 South Charles street, reports to us the following, under date of February 21: Business for the past week has ruled fair, with prices strictly adhered to, as per following list:

Ref. Bar Iron, 1 to 6 by 3/4 to 1	\$2 1/2 @ 2 3/4
" " 1 to 4 by 1 1/2 to 2	2 1/2 @ 2 3/4
" " 1 to 4 by 1 1/2 to 2	2 1/2 @ 2 3/4
And Square	2 1/2 @ 2 3/4
Hoop Iron, 1 1/2 wide and upward	3 1/2 @ 3 3/4
Band Iron, from 1 1/2 to 4 in. wide	3 1/2 @ 3 3/4
Horse-shoe Iron	3 1/2 @ 4
Wray Nail Rods	3 1/2 @ 3 3/4
Cast Machinery Scrap Steel	21 @ 22
Machinery Scrap	9 @ 9 1/2
Cast Spring Steel	8 @ 8 1/2
Common Horse Nails	10 @ 14
Perkins Horse shoes, 10 lb. of 100 lbs.	\$4.17 1/2
Mule shoes	5-37 1/2
Putnam Horse Nails	10 @ 23 3/4
Globe Horse Nails	20 @ 21 3/4
Railroad Spikes	3 @ 3 1/2
Less 1% discount to the trade.	

NEW ORLEANS.

Messrs. MINNIGERODE & CO., dealers in Railway Supplies, 61 St. Charles street, write as follows under date of February 18: The very favorable weather for the past week, following the severe storms which for the time disturbed commerce, has contributed very materially to an increase of business of all kinds. We note brisk sales of Scotch Pig at \$27 and \$28.50, according to brand, in retail car load lots, during the past week. Foreign New Rails.—Owing to the difficulty in obtaining tonnage, caused by the enormous importations through New Orleans and Galveston, Iron Rails could not be laid down here at present at less than \$46 for heavy sections and \$43 for light, while \$62.50 would about cover Steel Rails. We quote:

Track Supplies—Spikes	\$0.00 1/4 @ .00 1/2
Bolts	.03 1/2 @ .04
Spikes	.03 @ .04
Old Rails, f. o. b.	28.00 @ 30.00
Old Car Wheels, gross, f. o. b.	28.00 @ 30.00
No. 1 Wrought Scrap, net, f. o. b.	25.00 @ 26.00
No. 1 Cast Scrap, net, f. o. b.	20.00 @ 21.00
Bar Iron, card rates	20.50 @ 21.00
Nails	.03 @ .04

Our English Letter.

Review of the British Iron, Steel, Metal and Hardware Trades.

(From our Regular Correspondent.)

LONDON, ENG., February 7, 1881.

THE WEEK

just ended has in most respects been quiet and in some particulars disappointing to those whose views had led them to expect a bouncing revival of business with the advent of February. The late severe weather has left a very black mark on many departments of trade, and there seems to be a probability of the process of recovery occupying some time. It has been excessively mild for the season up to to-day, which is again very rough and wintry, but the check was so formidable that it seems to have completely damped out the ardor and hopefulness with which the year came in. In a few weeks, however, the shipping season will open and we shall be in a much better position to gauge our condition and prospects than we are at present. As regards crude iron the situation is in the main unchanged. The production in Scotland, Cleveland, and elsewhere is still enormously above the actual wants of the market, but there does not appear to be any likelihood of the balance being restored, judging by what is going on in all the ironmaking districts. Thousands of tons of iron are added to the reserve stocks every succeeding week, yet the ironmasters persevere, with the maximum of courage, and profess to have the utmost faith in the capabilities of consumption at some indefinite period of the future. They reason by analogy. Because spurts have always hitherto come, at irregular intervals, sufficient to clear off the bulk of the stock accumulated in this country, they infer that similar spurts will be experienced hereafter, in spite of the vast differences which exist between the present and past as regards the producing capacities of the outside world. They point to the cost of production now and aforesaid, and profess to believe that they may safely and surely go on making pig iron to any extent with prime cost figures as they stand at the present time. I have no right to dispute the accuracy of their calculations, nor have I any wish so to do. At the same time I am by no means fully convinced of the wisdom of their action. The Scotch ironmasters, in particular, appear to me to be seriously overshooting the mark, and to be pursuing a course which will, sooner or later, prove ruinous. They ought to know their business much better than any outsider, yet my own information leads me to the conclusion that they are not working in reliable lines. They are manufacturing iron for speculation rather than for use—for dealers in warrants, instead of for home consumption or for shipment—and I cannot believe that such a course will either prove remunerative or of long-standing. I can quite understand that they are willing to humor speculators by converting iron into warrants and disposing of the latter, but I am puzzled as to how long they expect the game to hold out. So far as my figures carry me I take it they have sufficient iron now in store—reserve, surplus stock—to furnish more than 10,000 tons a week for consumption or shipments for an entire year from this date without making a single ton of iron during the same period, yet they are turning out 25,000 tons weekly in addition, or about 5000 tons more than the market needs. If business be regulated by the laws of supply and demand, as we are generally led to believe, it does not need more than very ordinary wisdom or powers of penetration to foretell the end. To the Cleveland district these remarks scarcely apply, seeing that the pig iron made there is not of special, but of general, utility, and not only so, but is on offer at something like 10/ @ 12/ per ton below Scotch prices. That there is a wide difference of quality cannot be denied; but the question of cheapness is generally decisive nowadays, and the cheapest maker, in the majority of cases, bears off the bulk of the business. Besides this Cleveland has outlets, on the Continent in particular, which Scotland does not possess, and from its geographical position will always command a larger proportion of external, as well as of coastwise, trade than Scotland. These remarks, to a great extent, explain the relative dullness of some of our crude iron markets at the time being. In Cleveland alone nearly 50,000 tons were added to the reserve stocks during January, and in Scotland nearly 20,000 tons in the same month. The net consequence of these facts is a decline in prices and a renewed flatness, which will only be dispelled by vigorous and heavy shipments as soon as the season opens. The West Coast hematite furnaces present a marked and favorable contrast to the picture just limned. They have an abundance of work on hand, and are making deliveries pretty nearly "up to the hilt," with contracts running sufficient to insure ample work for some months ahead. The bulk of the production is on home account, but there are also calls from the United States, and in a small way, from the Continent of Europe. The steel rail mills, too, are quite as busy as when I last mentioned them. As a rule they are fully supplied with orders, and are so well booked forward that £7 is asked for the "optional" deliveries sent from your side and by some of the home lines of railway. Manufacturers, indeed, express themselves as being by no means anxious to book further orders, their current engagements being so satisfactory, as regards quantity at all events, that they are not under the necessity of hunting up additional work. From your side some of the London and Liverpool brokers report a number of inquiries for parcels of steel rails of 56 to 60 pounds section, but I am given to understand that there is much difficulty in placing specifications, the German makers being now so fully occupied that they are satiated and out of close competition for the time being. The difference in price between steel and iron rails is scarcely more than £1 per ton all told, yet the iron rail manufacturers are also busy, and are reported to be as independent as to near futures as their steel

competitors. They ask £5. 10/ @ £5. 15/ per ton f. o. b., and are not disposed to meet buyers on any lower figures. It may thus be inferred that these two important branches of industry are in a highly satisfactory condition, and that they are not likely to be uneasy factors for some months forward. Your demand is largely accountable for this result. It is also the main cause of the activity which is observable in the case of certain kinds of old materials. There is a very strong run on old double head rails, but, as I observed in my last, the supply is limited and holders are firm. They now ask £4. 10/ @ £4. 12/ 6 c. i. f., Baltimore, Boston, New York or Philadelphia, and are evidently of opinion that they will have matters pretty much their own way should your demand assume larger proportions. Good wrought scrap is similarly scarce and dear, No. 1 being stiffly held at £4. 5/ to £4. 10/ c. i. f. United States ports. Of lots suited for your market there are few immediately available. Old railway chairs and the like class of cast scrap are more freely offered at £2. 3/ to £2. 5/ f. o. b., while medium sorts of common wrought "refuse" are to be had at various prices between £2. 15/ and £3. 10/. Old railway leaf spring steel is quoted £5. 5/ to £5. 10/, and is in fair request for the United States, although it is not by any means generally understood how your people work it up. For hoops a few American specifications are being received and placed at £7. 5/ to £8 per ton. The usual cotton-tie contracts are also being renewed with certain Staffordshire and Lancashire makers. Merchant bars are still extremely quiet all round, and prices are cut to the finest possible point. Welsh bars are offered as low as £5. 2/ 6, and common Staffordshire, Yorkshire, Lancashire, &c., at £5. 10/ to £6. The list rates are unchanged, however, at £7. 10/, and appear likely to remain so under the influence of dearer coal and an incipient agitation on the part of the workmen and miners for higher rates of wages. The home trade in all kinds of finished iron is still dull, but some of the outside markets have recently revived sufficiently to give a much-wanted and warmly-welcomed spurt to the general volume of our export transactions.

SCOTCH PIG IRON

is quiet and weaker at the time of writing, warrants having gone back to 51 1/2, with a proportionate drop in several brands of makers' iron. There are 123 furnaces blowing in Scotland (eight on hematites) against 111 same date 1880, the make being about 25,000 tons weekly. In Connal's stores there are 517,318 tons—an addition of 3489 tons on the week, as compared with 438,341 tons this date a year ago, and 495,850 tons at Christmas, 1880. Shipments are on a limited scale, and have decreased 17,521 tons to date this year on a total of 36,601 tons. The foreign shipments are relatively better maintained than the coastwise, in the latter Cleveland having several obvious advantages. Importations of Cleveland pig into Scotland have fallen off 16,095 tons to date in 1881, on a total this year of 21,300 tons. Ballast pig is quoted 47/6 per ton. Much disappointment is felt and expressed in certain circles that the American (United States) demand for Scotch pig continues so light; yet in the face of the facts reported from your side it is difficult to conceive how it could be otherwise. A correspondent of the *Ironmonger* says he has, within the past week, seen telegrams to some of the largest houses in the Glasgow iron trade, positively assuring them that it is of no use to send pig iron at present to New York. The sooner the Scotch ironmasters recognize the force of this the better for themselves and their trade. Writing from Glasgow on February 5, James Watson & Co. said: "The Scotch iron market has had a downward tendency this week, with a fair business done in warrants, while the demand for makers' iron has been quiet. On Monday the market opened at 52 1/2, advanced to 52 3/4, and closed at 53 3/4, cash. On Tuesday the price receded from 52 1/4 to 52 1/2 per ton, and on the following day it further declined to 51 7/8, closing at 51 7/8 per ton. Yesterday it commenced at 51 7/8, cash, improved to 51 10/8, 8 days, and closed very flat at 51 3/8, cash. To day the depression continued and 51 1/8 was accepted, closing a shade firmer at 51 1/8, cash. The shipments last week were 8906 tons, as compared with 13,382 tons for the corresponding week of 1880." We quote:

	No. 1.	No. 2.	No. 3.
G. M. B., at Glasgow	52 6	50 6	50 6
Gartsherrrie, at Glasgow	51 1/2	53 1/2	53 1/2
Coltness	52 1/2	51 1/2	51 1/2
Summerhall	51 1/2	51 1/2	51 1/2
Langloan	52 1/2		

LARGE AMERICAN CREDITORS

appear, I notice, in the matter of Josiah Caldwell, public works contractor, of 12 King William street, London, E. C., who has presented a petition in liquidation, with liabilities amounting to £355,000, but has received his discharge. In the list of unsecured creditors are:

Cooke, N. B., New York.....	£. s. d.
French, A. S., Boston.....	256 0 0
Gardner, C. B., Boston.....	10,216 0 0
Meany, E. T., Boston.....	9,203 0 0
National Bank of Commerce, Boston.....	3,200 0 0
Reed, J. C., New York.....	16,206 0 0
Saltonstall, H., Boston.....	400 0 0
Watson, J. C., Boston.....	26,375 0 0
Wood, C. B., New York.....	2,474 0 0

IN THE LIST OF CREDITORS FULLY SECURED

Smith, J. R., Pearl street, New York..... 95 18

AMONG THE CREDITORS PARTLY SECURED.

Adams, Alvin (executor of), Boston.....	72,812 0 0
Atkins, E., Boston.....	30,222 0 0
Bardwell, J. (estate of), Boston.....	3,300 0 0
Beal, W. (care of F. A. Hawley), Boston.....	1,225 0 0
Bowler, J. H. (care of C. H. Warren), Boston.....	5,640 0 0
Bates, B. E. (estate of), Boston.....	48,370 0 0
Continental National Bank, Boston.....	4,180 0 0
Fiske, H. C., Boston.....	1,600 0 0
Farrington, E. T. (estate of), Boston.....	12,620 0 0
Globe National Bank, Boston.....	3,378 0 0
Gookin, S. H., Boston.....	4,200 0 0
Harvey, G. H., Gilroy.....	11,700 0 0
Howe, W. G., Massachusetts.....	1,400 0 0
Hildreth, A. E., Cambridge.....	2,200 0 0
Holdane, J. H., New York.....	180 0 0
Huntington, J. W., Boston.....	13,684 0 0
Mercantile Mutual Insurance Company, New York.....	544 0 0
Stevens & Amory, Boston.....	5,610 0 0
Stevens, W. M., Boston.....	100 0 0
Stockpole, D. D., Boston.....	1,100 0 0
Sewell, B. (estate of), Boston.....	4,000 0 0
Treadwell, G. L., Portsmouth.....	9,115 0 0
Thayer, C. L. (care of C. W. Hunting- ton), Boston.....	6,438 0 0
Weld, F. M., Boston.....	13,284 0 0

GERMAN LOSSES ON AMERICAN CONTRACTS.

The following paragraph, which I translate from the *Frankfurter Zeitung*, of Frankfurt-on-Main, may possibly interest some of your readers, and help them to comprehend the full meaning of certain transactions which have hitherto been clothed with somewhat of mystery: "The directors of the German Commercial Association at Frankfurt-on-Main have published the following official explanation in reference to some recently concluded rail contracts: 'The large contracts for rails, which the New York Commandite Company have sent us, made the necessity of raising an enormous sum of money unavoidable, but having perfect confidence in the manner this Commandite Company carried on business, and being informed by them that the greater part of these transactions were sales for which the money would be received as soon as the goods were delivered, they were allowed to draw certain sums, which, however, as we now find, were far in excess of the sums agreed upon. Upon the arrival of the rails in New York prices had fallen considerably; many buyers were insolvent, and numerous orders were countermanded. The exact particulars received on January 20 last show that, in consequence of the above credit, the obligations of the New York Commandite Company against our association, including the Commandite capital, amount to 7,799,971 marks, and that such heavy losses are anticipated as to necessitate most probably, after the absorption of the reserve funds and this year's profits, a reduction of 10,000,000 marks on the share capital. This figure will, however, be the extreme limit of possible loss.' I dare say some British adventurers, on similar lines, have not escaped without almost parallel results, some record of which will be certain to transpire before long.

AT SHEFFIELD

matters in most branches of business are jogging along quietly, albeit in many departments there is a sufficiency of work in course of being executed to obviate the necessity for much wailing and gnashing of teeth. The iron works are well engaged, but trouble is apparently close ahead, in the shape of a threatened general strike of South Yorkshire miners for an advance of 10 per cent. Already John Brown & Co., of the Atlas Works, have shut off their puddling furnaces, having a good stock of puddled bars on hand. The ironworkers, on the other hand, are undergoing the process of reducing wages. At the rail mills there is much activity, and the older steel works are moderately well employed. Samuel Osborn & Co., of the Clyde Works, have a dispute with their spring fitters, the men alleging that a reduction of 15 per cent is virtually proposed, whereas the firm state that an advance is claimed by the workmen. The table cutlery, scissors and razor manufacturers are yet briskly employed, particularly as regards razors, the demand for which appears to be almost insatiable. In the file trade there is not at the moment a "crisis," but matters may revolve around that vortex shortly should not trade become brisker. The edge-tool, saw and plated industries are for the most part tolerably active, but without pressure.

THE IVORY SALES

which commenced in London on January 26, and ended January 31, were productive of much interest, and established a higher range of prices than has lately been current. The quantity offered was 100 tons, against 123 tons same time last year, of which 34 tons Zanzibar and Bombay, 5½ tons Cape of Good Hope, 36 tons Egyptian, 19 tons West Coast African, 1 ton Lisbon, 1 ton of mammoth teeth (Siberian) and oddments. There was a large attendance of buyers, those from the Continent showing great spirit and enterprise. Your users seem to prefer to buy the material cut up ready for use—which may or may not account for the relatively slight way made by your cutlery manufacturers in export business. I saw a letter to-day, for instance, from Africa, in which your cutlery is said to be "nowhere," although your other goods are warmly praised. This *en passant*. The result of the ivory sales was an advance of £4 @ £6 on East Indian, £3 @ £6 on Egyptian soft, and £2 @ £4 on ditto hard. West Coast African was in great request, and went up quite £10 per cwt., soft scivellos for balls advanced £10, hard bangles, £2 @ £5. Sea horse tusks rather dearer, "whales" "teeth" much higher, rhinoceros horns neglected and cheaper. These results again demonstrate the scarcity of ivory, its enormous price of £600 @ £1000 per ton, showing the necessity for inventing adequate substitutes

for it as the march of civilization crowds out the elephant.

THE TIN-PLATE TRADE

remains in a condition which outwardly bears a great resemblance to the dullness which has prevailed it for many months past. There are those, however, who assure us that these signs of lethargy are but external dissemblings, and that they belie the inward awakening which is now making itself known as appreciated throughout the ramifications of this important industry. Personally, I am pleased to hear of this new life, and shall hope to witness its growth and development, although I am bound to confess that I am unable to perceive "where the farther comes in" just at present. We are assured, nevertheless, that several of the manufacturers are in receipt of very large orders, and that they have managed to book some of these new commissions at 10 to 15 per cent over recent rates. Let us hope this may be true. In the *Ironmonger* I notice an editorial which reads "inspired," discussing the question as to whether the large stocks held in this country represent the unsaleable surplus production over demand, or whether they are simply warehoused on this side on account and to order of your buyers or their intermediaries. The latter view is apparently that preferred by your contemporary, especially, it states, as all American orders now received are marked "urgently required."

IN SOUTH WALES AND MONMOUTHSHIRE

matters are quiet, but there is quite an average amount of occupation at the works and prospects are fairly bright. The iron rail mills at Cyfarthfa, Blenavon, Rhymney, &c., are well engaged and are said to have their product sold forward for several months. The exports from the ports of the Bristol channel during January were as under: New York, 30 tons scrap steel, 79,747 boxes tin plates, 4681 bundles of wire, 4629 tons steel blooms, 752 tons crop ends, 600 tons pig iron, 14,200 bricks, 38 cases galvanized iron, 120 cases yellow metal, 603 ingots and 240 slabs of tin. Baltimore, 12,836 boxes tin plates. Galveston Bay, 2015 tons rails, and Galveston wharf 280 tons rails. There went to Vera Cruz 3000 tons of rails and to Guaymas (Mexico) 764 tons steel rails, as well as 27 tons fish plates, 43 tons iron bars and sheets, 15 tons cast-steel, and 35 tons bolts, nuts, spikes, &c. Mr. W. Y. Edwards' current report of the Cardiff freight market is: "The freight market for the Southern ports has been firm during the past month, and the remarks I made in my circular of January 1 with reference to freights in that direction are quite borne out by the figures paid for charters effected during the past month. The last rate I have recorded for Galveston Bay was 16/6, and for the wharf 23/, with New Orleans at 14/ @ 14/6. These ports for the next few months will pay respectively, say, New Orleans, 16/6, and Galveston Bay, 20/, if not more. Little has been doing for the Northern ports during the past month, tonnage being supplied and weight carried by the berth boats at 10/ to New York. Little or nothing has been doing to Philadelphia, Baltimore, &c. An increased export is looked for during the next three months, as the inquiry for tonnage is coming forward for considerable quantities. Sailing ships for the Northern ports are obtainable at 7/ @ 8/, the inquiry being very weak for such. I understand that a 5000-ton contract for New Orleans at 16/ during next three months has been taken."

THE BOARD OF TRADE RETURNS

have been issued this evening, too late to admit of my giving an analysis of them in the present letter. The exports during the month of January were valued at £17,318,911, against £16,912,858 in January, 1880, and £14,196,518 in the same month of 1879. There has been a serious falling off in the value of the iron and steel shipments, but a marked increase in cotton and certain other manufactures. The imports were valued at £26,942,062, as against £32,372,907 in January, 1880, and £26,367,045 in January, 1879. Other particulars in my next communication.

FOREIGN.

FRANCE.

(Moniteur des Interests Matériels.)

PARIS, Feb. 6, 1881.—*Metals*.—Since our last report business in the metal branch has been quiet. Prices have remained unaltered. We quote at the close at Paris: Copper—Chill Bars, 164.50 @ 165 francs the 100 kilos; Ingots and Slabs, 172 @ 173; Cake, 170; Best Selected, 172.25; and pure Corcor Ore, 167.50. At Marseilles, Spanish, in slabs, 150; Red Tokat, 157.50; and Small Refined Ingots, 163; Sheathing, 152.50; Bolts, 121; and Yellow Metal Sheathing, 175. Tin.—We quote here: Banca, 250; Billiton, 248; Straits and Australian, 245; and English, 242.50. At Marseilles they quote: Straits, 250; Billiton, 245; English, 255; and Banca, 247.50. Lead.—We quote, at Paris, 37.50 @ 38.25; Marseilles quotes 35 @ 35.50; and Manufactures, 40 francs. Spelter.—We quote here, 43 @ 45.50. At Marseilles they quote: Straits, 45; and English, 42.50. Zinc.—We quote here, 45 @ 46 francs, less 3 1/2 for cash, and old Remelted, 44 @ 45 francs. Antimony is worth 185 francs at Marseilles. Iron.—Business in iron has become quite dull at Paris since the cold weather has put a stop to building. Dealers meanwhile are ready sellers, and try to secure profits on what they hold. In this manner a moderate trade is transacting on the basis of 19.50 francs for Merchant Iron the 100 kilos. The present paralysis need not, however, cause the least uneasiness, for it is nothing but the lull which follows the late excitement and rapid advances. Confidence in the soundness of the situation is not shaken. Works in the interior are well provided with orders—many of them even overladen with them. Our car manufacturers have more work on hand than they can conveniently attend to, and orders for cars are sent abroad. Coal continues active, without change.

BELGIUM.

(Revue Universelle.)

BRUSSELS, Feb. 6, 1881.—*Iron*.—Improvement in the iron branch is making slow but steady progress; in fact the slowness of the advance is looked upon as a sign that the revival we are witnessing is destined to be a lasting one. We are now also receiving plenty of orders for railroad material from abroad, not only from the East, but from Italy, Spain and Austria. Many of these orders are quite large. Inquiries are at the same time dropping in from Australia, as well as American countries. This is encouraging and neutralizes the effect of the rather slackened local demand noticed during the week. The fact is that the general situation is too sound in Belgium to cause the least misgivings, for, as we have just shown, a good export demand is now also manifesting itself in railway material and may, eventually, extend to other goods in the iron and steel

line. Merchant Iron may still be had at 13 francs in Belgium, whilst in Liege, where 14 francs are asked. Sheet Iron is wanted at 18 francs; Domestic Wire has been selling at 18.50 francs, Foreign at 17 francs in bond.

GERMANY.

(Hornsch.)

HAMBURG, Feb. 6, 1881.—*Iron*.—Our Dortmund correspondent reports to the following effect: "The upward tendency in iron has, it is true, made no further headway during the week under review, but the situation, nevertheless, remains a satisfactory one, for prices go on assuming greater firmness. Dealers also show greater alacrity to do business, so much so that during the past few days some large lines were taken by them upon the basis of 120 marks for Merchant Iron, while smaller lots cannot be had any more at the rolling mills for less than 125. From the Siegen district it is also reported that the higher prices lately established are now subscribed to readily. As for the Hardware regions at Ludenscheid, Asten and Iserlohn they also state that there is a good demand, that most factories are busy, and that it is hoped they will soon be able to obtain more remunerative prices than they are getting at present. The opinion here is becoming a general one that the revival which has been inaugurated will last. I still hear that in one of the united Siegen rolling mills' meeting, just held, a general advance in the price of Sheet and Forged Iron has been agreed to. Coal.—The sudden return to mild weather has caused quite a reaction in Coal, the dealers having decried of transactions at Hamburg. Large stocks of it still, bought as far back as November, and they now request our mines to be made to receive more orders. The only hope is now centered upon the consumption of iron works; if they do not buy largely soon we shall have a great decline in Coal. Metals during the week have been devoid of transactions at Hamburg. Lead.—We quote: English Pig, 17 @ 17.50 marks the 50 kilos; and Sheet ditto, 17.50 @ 18; German Pig, 15.50 @ 15.50, and Spanish, 15.50 @ 16. Copper.—We quote: Banca, 250; Billiton, 248; Straits and Australian, 245; and English, 242.50. Tin.—Banca, Australian and English common, 98 @ 100 marks; English Refined, 104 @ 106 marks.

HOLLAND.

(Koch & Vlierboom.)

ROTTERDAM, Feb. 1, 1881.—*Tin*.—Since the auction sale on January 25, there has been an advance of 2.25 guilders—Banca, spot, and Billiton, to arrive, selling at 55.25 guilders per 50 kilos. Soon, however, buyers withdrew, and Banca may now be had at 54; Billiton, spot, at 55.25 @ 55.75, and ditto, to arrive, at 54 guilders.

AUSTRIA.

(Austrian Trade Journal.)

VIENNA, Feb. 6, 1881.—*Iron*.—The uninterrupted favorable advices from abroad have indirectly contributed to prevent business in the iron trade in Austria from becoming unsatisfactory. A condition which would otherwise have been inevitable since the dissolution of the Merchant Iron combination and during the dull winter season. The buoyancy in foreign countries caused both dealers and consumers to buy on a more extensive scale not only Merchant, but also Pig Iron, and in this manner a receding of prices was prevented. The large orders for locomotives for France cause stiffness in thick sheet iron, while thin sheet iron and steel in sheets are in less request. In the latter two articles a strenuous effort is made to enlarge the field for their sale, abroad, and an attempt is made to compete with the makes from the Sieger districts in Southern Germany and in Switzerland. In Russia great activity is developing in building and reconstructing beet root sugar refineries, and Austrian manufacturers hope to do a good business with them in furnishing iron, &c. Our foundries and machine shops are not very busy just at present, but the rail rolling mills are in expectation of large commissions. There is also some well founded prospect for recovering the Italian market in Steel Rails and in Coal. Prices of Iron and Metals have remained unaltered; we therefore merely refer back to the quotations in our previous report.

EAST INDIES.

(Schmidt, Kustermann & Co.)

PENANG, Dec. 21, 1880.—*Tin*.—Since 10th inst. Tin has been in active request, both for Europe and the United States; prices have meanwhile been fluctuating violently. The market opened at \$27.75 per picul, then declined slowly to \$27.30, but finally recovered to \$27.55 @ \$27.65, at which figure it closes firmly. Receipts have been 8500 piculs; there were taken for Europe and the United States 6000, 2000 for India and China, and 950 piculs were shipped to Singapore and Cebu. Stock in bazaar 1000 piculs. Exchange has remained unaltered, with a hardening tendency. We quote 4 months' Bank bills, 3/8%. P. S.—January 6, 1881.—Receipts since the above was written have been 8500 piculs, while the sales have reached 7550 piculs. Except during a few days our market has been quite firm. It opened at \$27.50 per picul, and then declined to \$27.35, but finally recovered to \$28. Out of the sales effected, 6250 piculs were taken for Europe and America, and 1100 for India and China. The market closes with great firmness, with a stock on hand of 2400 piculs, and we are still informed at the close that a few sales have been made at \$28.30. Exchange, 3/8%.

Electrical Shadows.—Some curious phenomena, says the *London Times*, have been lately described by Herr Holtz to the Göttingen Academy. They are best obtained by fixing to one discharge rod of a Holtz machine a large concave disk with a piece of silk without wrinkles, adhering to it by electric action; at the point of the other rod, placed opposite, appears, when the machine is worked, a small, feeble, luminous star, and on the disk a luminous circle, and the shadows appear on the latter when the objects are interposed. That they are not optical shadows is proved, *inter alia*, by the fact that not all objects give them. They are produced in general only by conductors or semi-conductors; insulating bodies, when small, give no shadow; when large, they may give some shadow at first, but this gradually goes out as the action of the machine is continued. It makes no difference whether the conducting bodies are connected with the earth or insulated. The shadow-forming power is to be measured not only by the darkness of the image, but by the magnification. Herr Holtz tried pasteboard, ebonite, silk, linen, knitting needles and glass rods or tubes; the former he used in the form of strips, crosses and rings. The size and form of the shadows are affected by various things. The shadow is larger or smaller according as the body approaches the point or the large surface. It enlarges, too, outward from the center of the disk, so that the shadow of a strip of uniform width is narrowed in the middle. It is further notable that, to a certain limit, the strip gives the same shadow, whether it is placed with its broad side or its narrow edge toward the disk.

The Indicator publishes the following extraordinary story, which belongs to the class of "interesting, if true," announcements: While the great storm has undoubtedly done the telegraph companies serious injury by breaking down their wires, it is not entirely certain but that it may prove beneficial in the end. It is pretty certain that the wires will have to go under ground in this city, if it is necessary to use wires at all for short distances. There are several electricians who believe that for short distances mes-

sages may be transmitted without the use of wires, but it was not until the late storm interrupted telegraphic communication completely in this city that any successful attempt was made to put the theory into practice. We understand that Mr. J. Timmins, Hotchkiss & Burnham's operator at the Windsor Hotel, has succeeded for more than a week in transmitting stock messages to the down-town office without the use of the wire. Mr. Timmins and his employers are equally reticent as to the means used in transmitting these messages, but it is certain that the working is satisfactory and that the wire is not brought into use at all. It is impossible that any information can be obtained until after the process has been patented, as the invention must be extremely valuable.

Decorated Tin Plates.—The case of Flower vs. Rayner, involving the validity of the patent for the decoration of tin utensils controlled by the Tin Plate Decorating Company of this city, was decided on the 26th ult. The case was brought in the Circuit Court of the United States for the District of New Jersey against Thomas J. Rayner, a well-known manufacturer of Railway. The plaintiffs claimed, in effect, that their patent gave them exclusive right to decorate tin plates by the lithographic process, which the defendant had been in the habit of doing for a number of years, and which had been, indeed, done to a very considerable extent by manufacturers of tin utensils throughout the country. The plaintiffs were represented by Mr. Frederick H. Betts and Messrs. Nash & Holt, and the defendant by Mr. Rowland Cox, of this city. The case was argued upward of a year ago, since which time it has been held under advisement by the court. Judge Nixon has finally decided that the patent is totally invalid, not only because it is broader than the original, but because the description is not sufficiently clear to justify the court in countenancing it. The bill was, therefore, dismissed with costs.

An involved case of litigation is agitating the people of New Jersey, growing out of what is known as the "Washington street bridge" question. The proposed bridge in Washington street, Jersey City, is designed to fill a gap in what naturally might be a grand highway between New York and Communipaw and points beyond. As the New Jersey Central Railroad Company have extensive improvements at the latter point, they are regarded as the chief parties in interest. On the other hand, the Morris Canal Company claim to have valuable rights under water and in the large basin at the point designated, secured by a lease from the State. Navigators, they claim, would be seriously obstructed by an abutment in the center of the gap to support a draw. A sugar refining company close by also find the end of the street very convenient for storage, also for the loading and discharge of cargoes. The Pennsylvania Railroad Company, too, takes a hand in the scrimmage, because they have no special friendliness for a rival route. Moreover, the Lehigh Valley Railroad Company are their allies and share in the ownership of the Morris Canal. So, leaving out of the tangle any question relative to the alleged needed accommodation of local residents in Jersey City, or of persons desiring direct communication with Monmouth and other counties beyond Communipaw, there are many parties arrayed in this interminable contest. A bill providing for the bridge was before the House on Tuesday and passed to a third reading. Its fate in the Senate is doubtful.

The London Mining Journal states that at the Mannheim Industrial Exhibition over 8000 persons have been conveyed at the rate of nearly three miles an hour by the electric lift of Dr. Werner Siemens, of Berlin. The lift is quite safe, the cage being suspended by two wire ropes, which pass over drums and carry counter-weights to balance the ordinary average load. To raise or lower the lift, therefore, only a slight additional power is required. This is supplied in the form of an electric current from a dynamo-electric generator on the ground, and is conducted to a second dynamo machine attached to the carriage. The propulsion is effected by means of a metal ladder or rack, which runs up the middle of the shaft or passage of the lift, and into this rack work two toothed wheels, carried by the lower part of the framework of the carriage. These wheels are driven by the revolving armatures of the dynamo machine on the car by means of an endless screw. The current is led from the stationary generator to the moving one by conductors running up the sides of the ladder and two metal rollers which make contact with them, and are connected to the armature of the machine. The return part of the circuit is formed of the metal wires by which the carriage is suspended.

Malleable iron is said by Forquignon to be intermediate between steel and gray pig iron, differing from the latter by the special nature of its amorphous graphite and its greater tenacity, and from steel by its small elongations and its large proportion of graphite.

An invention has been made in Hartford for announcing the stations on railroad trains, which can be worked by steam from the engine or by electricity, and a company has been formed, with a capital of \$100,000, to manufacture it, with W. H. Goodrich, of the Hartford Courant, as president.

The Mersey Steel and Iron Company, Limited, of Liverpool, has gone into liquidation. Its liabilities are £358,000. The assets, consisting principally of stock, real estate and machinery, are considerable. The losses amounted to £38,000 during the last seven months.

Mr. Richard A. Proctor, says the *London Truth*, has devoted his energies to the solution of the "Fifteen" Puzzle, and has published some three or four learned articles on the subject. He has calculated that there are no fewer than 20,922,789,888

positions in which the puzzle may be placed, if an aspirant desires to attempt its solution. Of these he has satisfied himself that one-half are soluble, and the remaining half insoluble. The solubility of the problem depends upon a strange law of relation between the line in which the vacant square occurs, and the number of what Mr. Proctor terms "displacements." If, for instance, we read the box in the ordinary way, beginning with the upper horizontal line from left to right, and find it to begin with 5, there are then four displacements, because 5 comes before 1, 2, 3 and 4, whereas it ought to follow them. If the next figure be 3, there are then two more displacements, because 3 comes before 1 and 2, whereas it ought to follow them. Now, according to Mr. Proctor, if the number of displacements are even, and the vacant block is in one of the even horizontal lines, reading from left to right—that is to say, in the second line from the top or in the bottom line—then the problem is soluble. The same is the case if the number of displacements are uneven, and the vacant block be in an uneven line. But where the displacements are uneven, and the line of the vacant block even, or vice versa, the problem is insoluble.

Messrs. Bacon & Henry, proprietors of the Troy Stove Lining and Fire-Brick Works, send us a neat little catalogue which contains more matter of interest than we thought this business would furnish for catalogue purposes. In addition to matter of special value to consumers of their brick, the catalogue contains some pleasant reading matter, from which we learn that the business of this concern was founded in Albany by Jacob Henry in 1825. In 1871 it was removed to Troy, and has since occupied twelve city lots on the corner of First and Monroe streets. Their productions are chiefly stove linings, but they are also extensive producers of fire-brick for cupolas, blast furnaces, &c. Their kilns are fired with anthracite, which they have found produces a harder and more durable brick than wood. They have a large list of stoves for which they manufacture linings, and a very valuable stock of patterns. They claim for their linings every desirable quality of freedom from clinkers, uniformity, durability, finish and fit, and these claims are sustained by a heavy array of testimonials from leading houses in the trade. The catalogue contains very specific and valuable directions for ordering repairs or odd pieces to complete sets, and some suggestions regarding causes of alleged errors in shipment which the trade would do well to note and remember. The illustrations relate chiefly to cupola and furnace brick.

The Duffy Tool Company, of Chicago, is about to produce steel of a uniform character, adapted to the manufacture of tools. Two steel furnaces have been built, with a gas generator to furnish fuel, and from which 12 heats a day may be made with 24 crucibles each, having a capacity of 60 to 65 pounds of steel, giving a production of nearly 9 tons of ingots each 24 hours. The dies for hammering tools and other articles is the work of the company, and the advantage of such improvement is seen in the fact that where, as by the old process, a man and helper were able to turn out but six a day, the same force will now produce upward of 120 solid steel sledges in that time. One of the largest power punches in the country is in use for that part of the work. Among the articles in preparation is a railroad claw bar, and the disks for the Rotary Steel Plow Company, the disks to be forged from a single piece of steel, and to be 3 feet 2 inches in diameter.

Judges Blodgett and Drummond, of the United States Court, presiding in the recent suits of Messrs. Washburn and Moen Manufacturing Company against manufacturers of barb wire fencing infringing on the patents controlled by them, have confirmed their previous decision in the suit of J. L. Haigh, De Kalb, Ill., enjoining him from the manufacture of barb wire fencing, and it is thought that he cannot again enter into the manufacture, as to grant him a license under the circumstances would conflict with the rules made some weeks since governing the same.

The Canal Board at Albany, on motion of Attorney-General Ward, will inquire into the management of the Hudson River Bridge Company at Albany, who are alleged to have collected tolls in excess of the 10 per cent. allowed under the law.

A Glasgow paper notices the departure of 100 Greenock boiler-makers in the steamer Prussia, who have been engaged to work in a "shipbuilding yard at Wyndott, near Boston." The writer probably intends to speak of the yard at Wyndotte, on the lakes.

E. M. Marble has been relieved from double duty as Commissioner of Patents and Acting Commissioner of Indian Affairs. Thomas M. Nichol, recently appointed Chief Clerk of the Indian Bureau, takes the place of Mr. Marble as the head of the office.

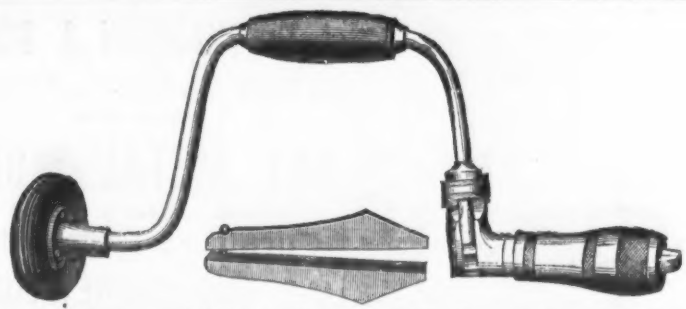
Commander Wyse, who started for Panama on Saturday, will assure the Colombian government that the concessions obtained by him will be turned over to M. de Lesseps.

Six hundred inventors have sent models or plans of improved stock cars, in compliance with the offer of the American Humane Association of a prize of \$500.

It is now said by the master mechanic of the East River Bridge that the bridge will be open for foot travel in the spring of 1882.

Shipbuilding on the Clyde continues very brisk, and new contracts are being concluded every day.

A certificate was filed last Saturday for the increase of the Western Union's capital stock to \$80,000,000.



Though we have occupied this identical space in *The Iron Age* for more than twelve years, and though we have been the leading Bit Brace manufacturers of this country during all that time, we have seldom spoken of it in our advertisement, for the reason that all the leading dealers were supposed to know it. Since we first put

THE BARBER IMPROVED BIT BRACE

on the market, at least a dozen patent braces have run their race through the stores and junk stores, and are now forgotten. It is true, some of them died violent deaths, but most of them perished from constitutional weakness. We do not offer to meet competition, as no one else can make our Brace, and we have nothing to compete with. Others might if they would make their braces of steel, but it is much more expensive, and no one can tell the difference until the brace is put into use. All of our Nickel-Plated Braces are made of rolled steel, with forged steel jaws, which will never wear out. We formerly made malleable iron jaws, which in time wore out. All such we will now replace with steel for 25 cents per pair. They are all one size and will always fit. Our Ratchet Brace at the present time has no competitor in the market. Dealers who sell other styles of braces will find it to their interest to buy their stock of ratchets from us.

The price of Barber Braces has not been changed for many years, and we do not anticipate any variation in the near future. Thanking our customers for past favors, we now solicit their future orders.

MILLERS FALLS CO.,
74 Chambers Street, New York.

HEATON & DENCKLA HARDWARE CO.,
Hardware Commission Merchants,
507 Commerce Street, Philadelphia.

E. & G. BROOKE'S "Anchor Brand" Nails, Brads, Spikes, &c.
MALLORY, WHEELER & CO.'S Door and Pad Locks.
UNION MANUFACTURING CO.'S Butts.
AMERICAN SCREW CO.'S Screws.
D. R. BARTON TOOL CO.'S Edge Tools, &c.
FRANCE'S Shutter Holders.
Anti-Window Rattlers, Brass and Nickel-Plated.
WESTERN FILE CO.'S Cast-Steel Files.
AMERICAN SHEAR CO.'S Shears and Scissors.
H. M. MYERS & CO.'S Shovels, Spades and Scoops.
STEELE & SONS' Wrought Handle Sad Irons.

EXCELSIOR MILLS, Genuine Turkish Emery.
BROWN & BRO.'S Brass and Copper Wire, Rivets, Spoons, &c.
GAYLORD MANUFACTURING CO.'S Tilt, Chest and Cupboard Locks.
AMES' Genuine Chester Emery.
COLWELL & COLLINS, NORWAY BOLT CO., Norway Carriage and Fire Bolts.
PLYMOUTH MILL CO.'S Black and Tinned Iron Rivets.
AMERICAN MACHINE CO.'S Fluters, &c.
STUART, PETERSON & CO.'S Tinned and Enamelled Ware, &c.
HUSSEY, HOWE & CO.'S Bar & Sheet Cast Steel.

Also a large line of Heavy and Shelf Hardware.

RHODE ISLAND HORSE SHOE CO.,

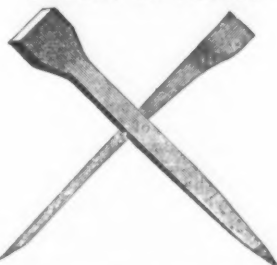
MANUFACTURERS OF

Horse, Mule & Snow Shoes of the Perkins Pattern.

Works at Valley Falls, R. I., and Buffalo, N. Y. Office, 31 Exchange Place, Providence, R. I.
W. CARPENTER, President. C. H. PERKINS, Gen'l Manager. R. W. COMSTOCK, Secretary.

NATIONAL Horse Nail Co.

MANUFACTURERS OF
FINISHED
[BRIGHT OR BLUED]



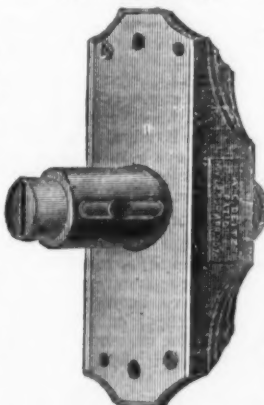
These nails are made of the best brands of NORWAY IRON, and are guaranteed to be equal to any in the market.

NATIONAL HORSE NAIL CO.,
VERGENNES, VT.
DURRIE & McCARTY, Agents,
No. 97 Chambers St., New York

A. E. DEITZ,

(Successor to Barnes & Deitz.)
Manufacturer of
Store Door Locks, Night Latches, Padlocks, Drawer Locks, &c., with Flat Steel Keys.

EXTENSION TUBE



STORE DOOR LOCK, No. 184.

Durrie & McCarty, Agents,
97 Chambers & 81 Reade Sts., New York.

AXLES

All kinds Wagon & Carriage Axles
Manufactured by the
LANBERTVILLE IRON WORKS.
LANBERTVILLE, N. J. Send for prices.

Established in 1839.

Formerly L. & A. G. Coes.

L. COES & CO.
Manufacturers of L. Coes'
GENUINE IMPROVED AND MECHANICAL
Patent Screw Wrenches

UNDER PATENTS DATED

MARCH 23, 1869,
REISSUED 1870.

NOVEMBER 10, 1863,
FEBRUARY 23, 1864,
REISSUED JUNE 1, 1869,
IMPROVED AUG. 1, 1877.

The back thrust when in use borne by the SHANK instead of the Hand's
None genuine unless stamped "L. COES & CO."

WORCESTER, MASS.

Warehouse, 97 Chambers St. & 81 Reade St., N. Y.
DURRIE & McCARTY, Sole Agents.

LONDON PUNCH. WHAT IS IT?



The Field, the country gentleman's newspaper of Great Britain, says: "But the Pennsylvania Lawn Mower will recommend itself, both to the amateur and the professional, from the diminution of labor in driving it as compared with other machines, and also from the excellent manner in which its work is done, the hardest weeds being removed as smoothly as the youngest grass. We find that a man can work the 18-inch machine as easily and as fast as the same man, aided by a strong boy of sixteen, can work an ordinary machine of the same width. A 14-inch machine can readily be worked at a fast pace by a boy or moderately strong lady; and, indeed, one peculiarity of this machine is that it does fast work better than slow. We strongly recommend the 'Pennsylvania' to our readers, as far as it is possible to form an opinion from a month's trial; but we may state that during that time it has been constantly used on three acres of grass."

LLOYD, SUPPLEE & WALTON, Philadelphia.

DURRIE & McCARTY, New York.

ESTABLISHED 1834.

MALLORY, WHEELER & CO.,

NEW HAVEN, CONN., U. S. A.,

Manufacture exclusively a large variety of

DOOR LOCKS, KNOBS, PADLOCKS,
BRONZE DOOR FURNITURE, &c.

Gold Bronze Trimmings in NEW DESIGNS. No extra charge for our NEW IMPERIAL FINISH.

See samples of NEW LINE low priced Reversible Knob Locks, No. 2200, &c. with New Keys and variety of changes.

WAREHOUSES,

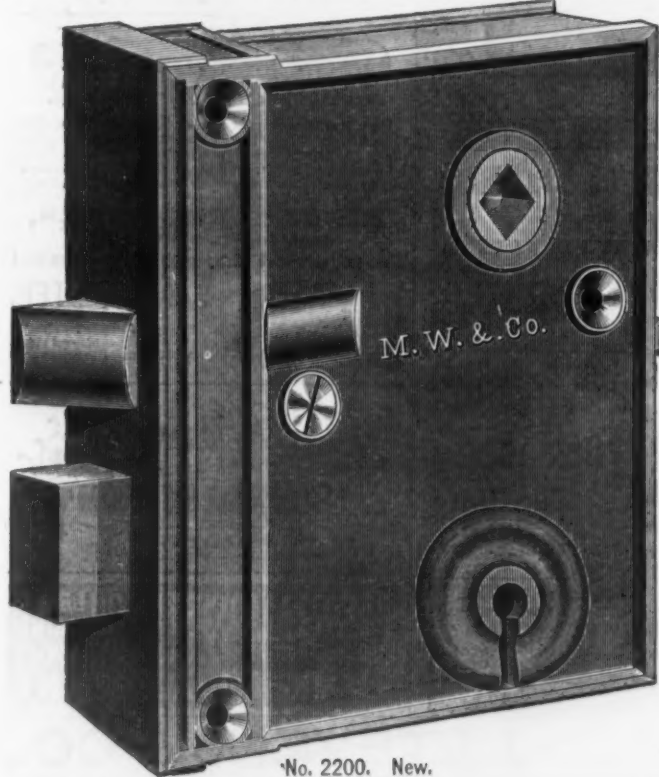
Where samples and a stock of our goods may be found and orders filled upon same terms as from the factory:

SARGENT & CO., No. 37 Chambers Street, New York.

HEATON & DENCKLA HDW. CO., No. 507 Commerce St., Philadelphia, Pa.

OTIS D. DANA, Nos. 22 to 32 Pearl Street, Boston, Mass.

JOHN R. KELSO, Jr., No. 23 S. Charles St., Baltimore, Md.



No. 2200. New.



DAVID HYMES & CO.,

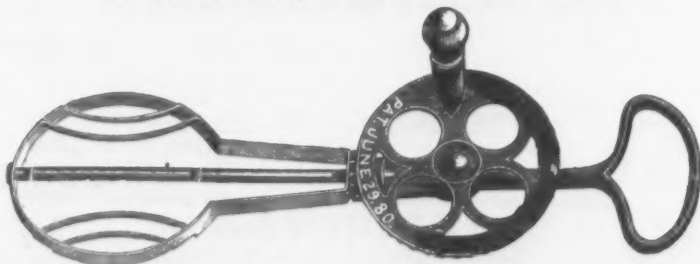
92 Church Street, New York,

Hardware Manufacturers' Agents,

And Sole Manufacturers of the

"ACME EGG BEATER,"

The Best and Cheapest Egg Beater in the Market.



Bargains in Hardware and Cutlery.

Low estimates made on all kinds of small castings in the rough, japanned or varnished.

WALKER'S

Forged Horse Shoes,

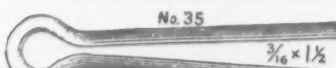
SHOENBERGER'S

Patent Toe Calks,

Superior to any in market.

Send for prices and samples.

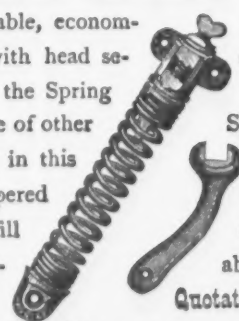
A. BUSSING, General Agent,
4 Warren St., New York.



BROWNING, SISUM & CO., 85 Chambers St.,
Manufacture
Belt Hooks, Cotter, Spring Keys, D Rings,
Snaps, and everything pertaining to wire bending.
Factory, BROOKLYN.

THE UNION DOOR AND GATE —SPRING—

The most practical, durable, economical, and best Spring made. It is the only Spring with head set-ary. It is impossible for the Spring most objectionable feature of other to secure the tension, is in this manufacture four sizes, coppered day we will be able to fill which are the only adjust- now made.



ically, and best Spring made. curesly connected and station- to slip from the head. The Springs, the extreme difficulty entirely avoided. We man- or japanned. At an early orders for our Spring Hinges, able and low priced Hinges Quotations cheerfully furnished by

The Edwards Manufacturing Company,
DETROIT, MICH.

DURRIE & McCARTY, Sole Agents, 97 Chambers Street, N. Y.

The Advance in Mining and Metallurgical Art, Science and Industry since 1875.*

BY WM. P. SHINN.

It seems proper to present in the transactions of the Institute, from time to time, formal record of the advances made in the arts and sciences to which our organization is devoted—milestones in the highway of progress—from which our successors may measure what they in their turn have gained. The admirable address of the Hon. Abram S. Hewitt, then president-elect of the Institute on "A Century of Mining and Metallurgy in the United States," read at the opening of the meeting held in this hall in June, 1876, forms a point of departure and the conclusion of the eighth decade of the nineteenth century, and the end of the first five years of our country's second century seems to offer a fitting time for again making up our record.

The period since 1875 has been marked by a degree of activity in mining and metallurgical industry never before equalled in our history; while the progress made in the science and art has been, if possible, still more noticeable. Whether we consider the mining of iron, ore and coal, or of the precious metals—the advances made in smelting the former and in reducing the latter; the extraordinary increase in the production of Bessemer steel, or the science of Thomas and Gilchrist, which makes the hitherto rejected phosphorus the corner stone of success, the past five years are alike noticeable for the progress they have shown, to some of the most marked features of which I will briefly call your attention. The following table exhibits the production of the minerals and metals during the period under consideration.

STATEMENT OF ANNUAL PRODUCTION OF LEADING MINING AND METALLURGICAL PRODUCTS DURING THE TEN YEARS 1871-80.

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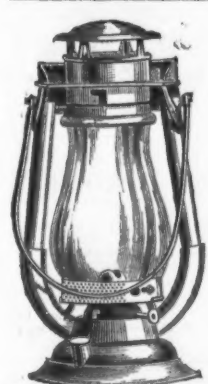
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Represented at Boston by WITHERELL, Beck, 31 Oliver St.; at Milwaukee by JOHN FRITELAFF, 43 to 49 West
Water St.; at Chicago by S. D. KIMBARK, 80 to 84 Michigan Ave.

ALBANY & RENSSLAER IRON & STEEL CO.,
Troy, N. Y.,
Office in New York City, 56 Broadway,
MANUFACTURERS OF

BESSEMER STEEL RAILS,
Machinery Steel, Merchant and Ship Iron.
HORSE SHOES.

SAM'L G. B. COOK & CO., Agents for Southern States,
67 and 69 German Street, Baltimore, Md.

FRANCIS HOBSON & SON
97 John Street, NEW YORK,

Sole Manufact'rs of **"CHOICE"** Extra Cast Steel.

Manufacturers of all Descriptions of Steel.

Manufacturers of Every Kind of Steel Wire.

Don Works, Sheffield, England.

CHAS. HUGILL, Agent.

THE
STEEL COMPANY OF SCOTLAND, LIMITED,
(SIEMENS' PROCESS)
MANUFACTURERS OF

Steel Rails,	Steel Ship Plates.
Steel Blooms for Rails,	Steel Boiler Plates,
Steel Blooms for Wire,	Steel Angles,
Steel Wire Rods,	Steel Forgings,
Steel Locomotive Fire Boxes,	Steel Castings.

JAMES LEE & CO.,
Resident Agents for the United States,
72 Pine Street, New York.

GEO. SANDERSON & CO.,
MANUFACTURERS AND

Importers of STEEL,

Removed to 30 Gold Street, New York.

Particular attention is paid to quality and temper for FILES, SAWS, EDGE TOOLS,
TABLE and POCKET CUTLERY, TOOLS, TAPS and DIES; also for COLD ROLLED STEEL for
CLOCK SPRINGS, CORSET CLASPS, &c.

A Large Assorted Stock of JOHN ROTHERY'S FILES always on hand.

CHROME STEEL WORKS,
MANUFACTURERS OF
CHROME CAST STEEL,

WARRANTED SUPERIOR TO ANY STEEL IN THE MARKET—EITHER ENGLISH OR AMERICAN
—FOR EVERY PURPOSE.

Principal Office and Works, Kent Ave. and Keep St., Brooklyn, E. D., N. Y.
S. H. KOHN, Chicago Branch, **MALCOLM McDOWELL, Manager.**
Proprietor. 191 Lake Street.
C. P. HAUGHIAN, Cincinnati Branch,
Superintendent. **GEORGE KINSEY, Manager,**
193 Central Avenue.

JOLIET STEEL COMPANY,
MANUFACTURERS OF
Steel Rails,
ALL WEIGHTS.

The Company warrant its Rails equal in quality to any manufactured in the
United States.
ALEX. J. LEITH, President. } **CHICAGO.** } H. B. SMITH, General Sup't.
W. R. STIRLING, Treasurer } } JOLIET.
C. E. SARGEANT, Secretary }
Office, Rooms D and E, Honore Building. Works, Joliet, Ill.

Steel.
R. MUSHET'S
Special Steel

FOR
LATHES, PLANERS, &c.

Turns out at least double work by increased speed
and feed, and cuts harder metals than any other
steel. Neither hardening nor tempering required.

Sole Makers,
SAMUEL OSBORN & CO.,
Sheffield, England.

Represented in the United States by
B. M. JONES & CO.,
Nos. 11 & 13 Oliver Street, BOSTON.

STAR BRAND
BLACK LEAD STOPPERS,

FOR
Bessemer Converters and Siemens-
Martin Furnace Ladles.

All the regular sizes in stock, with Nozzles to fit
each size. Special sizes or shapes made to order
from sample or drawing.

Black Lead Crucibles, all kinds and sizes.
TAUNTON CRUCIBLE COMPANY,
Taunton, Mass.
D. A. TREFETHEN, Treas. W. T. MACFARLANE, Agent.

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W. R. HART, Agent,
208 S. Fourth St., Philadelphia, Pa.
THOS. J. HOYT, Agent,
709 North Second St., St. Louis, Mo.

MANUFACTURERS OF
STEEL COMPRESSED SHAFTING,

"Benzon" Homogeneous Plates
For Rollers, Fire-boxes, &c.

Axles, Crank Pins, Spring Steel,
And all other kinds of

Martin-Siemens Steel and Iron
For Railroad purposes, &c.

IMPORTERS OF
IRON AND STEEL RAILS,
SWEDISH IRON,
Tin and Terne Plates and Metals.

H. & A. CARTER,
1a Laurence Pountney Hill,
Cannon Street, London, E. C.,
Iron and Steel Merchants,

Exporters of Iron and Steel Rails, Blooms, Spie-
gelsisen, Pig Iron, Crop Ends, Old Rails and Scrap,
Iron Ore, &c. Sole agents for the sale of the Vena
Dulce (Somersetshire) Iron Ore from the Magdalena
Mine. Shipping Port: Bilbao.

Analysis of "Magdalena" Ore.

Silica	4.05
Peroxide of Iron	59.92
Oxide of Manganese	1.65
Alumina	1.54
Lime	0.33
Magnesia	traces
Phosphoric Acid	0.04
Sulphuric Acid	0.42
Combined Water	5.97
Moisture	2.43
	100.43

Metallic Iron..... 59.92
The Sulphuric Acid exists as Sulphate of Lime,
and is, in my opinion, not detrimental.
Signed, E. D. RILEY, F. C. S.
Cable address:
HENRY CARTER, London.

R. S. DORSEY,
MANUFACTURER,
INDIANAPOLIS,
INDIANA.
LIGHTNING STUMP PULLER.
THE ONLY GOOD STUMP
PULLER MADE IN THE
UNITED STATES.
Send for Illustrated
Circular and
Prices

Emery Grindstones, &c.

Walter R. Wood,
GRINDSTONES.

Berea, O., Nova Scotia, & other brands
983 and 985 Front Street, New York.

GEO. CHASE,

The largest manufacturers in the world of
OIL STONE

Of all description.
107th Street and Harlem River,
Send for Illustrated Price List. **NEW YORK.**

LOMBARD & CO.,
Importers and Dealers in

GRINDSTONES,
Cor. Lewis Wharf & Atlantic Ave., Boston.
Stones for Machinists, Carpenters, Farmers and
Glass Cutters constantly on hand and cut to order.

ASHLAND EMERY CO.
CHARLES ALDEN, MANAGER.

Importers and Manufacturers of **TURKISH EMERY**
A. A. IRYINE & CO., Agents,
14 Murray St., NEW YORK.
Send for quotations and samples.

Steel.
THE EDGAR THOMSON STEEL CO.,
LIMITED.

MANUFACTURERS OF



General Office and Works at Bessemer Station (Penn. R. R.), Allegheny County, Pa.

New York Office, 57 Broadway.

The Company warrants its rails equal in quality to any manufactured in the United States.

Branch Office and P. O. Address, No. 48 Fifth Ave., Pittsburgh, Pa.
THOS. M. CARNEGIE, Chairman. **D. A. STEWART,** Sec'y and Treas.

NORTH CHICAGO ROLLING MILL CO.

ESTABLISHED 1857.

CAPITAL, \$3,000,000.

INCORPORATED 1859.

Works at Chicago, Ill., and Milwaukee, Wis.

MANUFACTURERS OF

MERCHANT BAR, FISH PLATES, PIG METAL,
IRON RAILS & BESSEMER STEEL RAILS.

Present Annual Capacity of these Works.	Fish Plates.....13,000 tons
	Merchant Bar.....40,000 "
	Pig Metal.....1,200,000 "
	Iron Rails.....110,000 "
	Steel Rails.....100,000 "
	Total Capacity per year.....473,000 "

OFFICES:

17 Metropolitan Block, Chicago, Ill.
 37 Mitchell Block, Milwaukee, Wis.

O. W. POTTER, President, Chicago.
 N. THAYER, Jr., Vice-President, Boston.
 S. CLEMENT, Treasurer, Milwaukee.
 R. C. HANNAH, Secretary, Chicago.

M. K. Moorhead.

G. F. McCleane.

W. J. Moorhead.

SOHO IRON MILLS.

MOORHEAD & CO.,

MANUFACTURERS OF

GALVANIZED SHEET IRON,

Juniata, Charcoal and Common.

Sheet & Plate Iron,

And Special Sizes for Sap Pans.

PITTSBURGH, - - - PENN.

FIRST QUALITY.

SECOND QUALITY



NOTICE.

Hereafter our **GALVANIZED SHEET IRON** will be branded as per cuts in margin. We have adopted these



TRADE MARKS

to protect ourselves and the trade against imitations of our iron, as was the case under our old brands.

THIRD QUALITY

as heretofore.

REFINED.

ELBA IRON & BOLT CO., Limited.

MANUFACTURERS OF

MERCHANT BAR IRON,

Skelp Iron, Splice Bars, Railway Track Bolts, Car, Bridge, and Machinery Bolts, Nuts, &c.

We invite the attention of RAILROAD MEN especially to our make of SPLICE BARS and Track Bolts. Using the best brands of REFINED IRON, and paying close attention to the finish of our manufactures, we are enabled to offer our patrons BOLTS, NUTS, SPLICE BARS, &c., of excellent quality. Our works have been enlarged within a few years; all orders are now executed with promptness; all our work guaranteed.

SEND FOR PRICE LISTS AND INFORMATION TO

ELBA IRON & BOLT CO., Limited, Pittsburgh, Pa.

W. K. Ross,

97 CHAMBERS ST., NEW YORK.

SCYTHES & SNATHS,

FORKS, HOES & RAKES

FOR EXPORT.

PHILADELPHIA SCREW CO., Limited,

Twelfth and Buttonwood Streets, PHILADELPHIA.

Manufacturers of

IRON & BRASS WOOD SCREWS.

Quality, finish and tests as to strength guaranteed equal to any in the market.

With improved facilities and largely increased capacity for production, we can fill orders promptly, and invite inquiries for discounts. A full line in stock.

WIRE NAILS

French Points, Window Shade Nails,
 Upholstering, **WAGON NAILS**, Molding Nails,
 (Sample Cards sent on application.)
 Electrotype, Roofing Nails,
 Barbed Caster Nails.

Veneer Nails, Label Tacks and small Nails of all kinds, Cabinet Nails, Barbed Lock Nails, Cigar Box Nails, &c., &c., put up in bulk, 5 lb. packages, papers, or as wanted.

AMERICAN WIRE NAIL CO.

Factory, Fifteenth and Madison Sts.

COVINGTON, KY.

ESTABLISHED IN 1859.



PUBLISHED EVERY SATURDAY.

THE OLDEST AND CHIEF REPRESENTATIVE OF THE IRON, HARDWARE AND METAL TRADES.

OFFICE: 44a CANNON STREET, LONDON, E. C.

ADVERTISEMENTS AND SUBSCRIPTIONS ARE RECEIVED AT THE VARIOUS OFFICES OF "THE IRON AGE," NAMELY:

NEW YORK OFFICE: DAVID WILLIAMS, Publisher of *The Iron Age*, 83 Reade street.

PITTSBURGH OFFICE: 77 Fourth Avenue—JOS. D. WEEKS, Manager and Associate Editor.

CINCINNATI OFFICE: Builders' Exchange—T. T. MOORE, Manager.

PHILADELPHIA OFFICE: 220 South Fourth Street—THOMAS HOBSON, Manager.

SOUTHERN OFFICE: Cor. Eighth and Market Streets, Chattanooga, Tenn.—S. B. LOWE, Manager.

SPECIAL FEATURES.

Notes of Novelties.—This is a department of the journal always watched with interest by the trade, as it contains an account, from week to week, of the novelties which manufacturers and inventors are introducing to the notice of the trade. These articles are freely illustrated.

Special Correspondents.—The *Ironmonger* has a deserved reputation for its special correspondence from all the principal Continental, British and manufacturing centers. The writers are gentlemen holding important positions in the districts with which they are connected, and possess facilities for acquiring information specially suited for the columns of the *Ironmonger*. *The Week*, *Legal Notes*, *Trade Notes*, *Bankruptcies*, *Foreign Notes*, *Colonial Notes*, *Merchants' Circulars*, &c., are each departments of the journal, containing a digest of all matters of direct interest to the Iron, Hardware and Metal Trades. In addition to the above, there is a carefully classified list of Patents, together with Editorial Notes, French Belgian and other Special Correspondence.

SUBSCRIPTIONS

to the *Ironmonger* and *Metal Trades' Advertiser*, with which is sent every fourth week the Foreign Supplement (see below), may commence from any date, but are not received for less than a year complete. The rate is \$5 per annum, inclusive of postage to any part of the world outside Great Britain. To every subscriber is presented, free, in the course of his year, a handsome and useful *Ironmongers' Diary and Text Book*, a work sold to non-subscribers at 75 cents.

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SPECIAL ISSUES.

In the spring and autumn of each year there is published a Special Issue, the circulation of which is not less than **Twelve Thousand (12,000)** copies.

THE IRONMONGERS' DIARY AND TEXT BOOK.

This is an annual, presented free to every Subscriber to the *IRONMONGER AND METAL TRADES' ADVERTISER*. It contains a large number of ruled skeleton pages for diary and other entries, and in addition much useful reference information, varied from year to year. It is handsomely bound in cloth, gilt; and as copies are used in thousands of establishments for a whole year, it is obviously a medium of exceptional value for advertisements. Sold to non-subscribers at 75 cents.

THE FOREIGN SUPPLEMENT

Is published every fourth week in connection with the extensive and world-wide circulation of the *Ironmonger* itself. The dates of its publication for the next twelve months will be as follows:

MARCH 4, APRIL 2 and 30, MAY 26, JUNE 25, JULY 23, AUGUST 20, SEPTEMBER 17, OCTOBER 8, NOVEMBER 6, DECEMBER 3, JANUARY 24, 1882.

This Supplement is published in

FIVE LEADING COMMERCIAL LANGUAGES

of the world, including English, and is sent to all the countries where they are spoken, thus placing the contents of the *Ironmonger* not only within reach out in the native language of eighty millions of German, forty-two millions of French, twenty-eight millions of Italian, and fifty-one millions of Spanish speaking people; or, in all, over two hundred millions of inhabitants in the principal nations where the best purchasers of manufactured goods are to be found.

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Advertisers will do well to use illustrations freely. Where economy of space is an object, a left page illustrated and described in one language, or a right page illustrated and described in another language, will be suitably described in four or more languages on the opposite or right page without illustrating.

THE WHOLE FOREIGN HARDWARE TRADE,

so far as our experience of twenty years is concerned, will be covered by THE FOREIGN SUPPLEMENT at least twice a year. Thus a Price List or Advertisement inserted in the *Ironmonger* and *Foreign Supplement* is a strikingly powerful and most efficient way of publicity not to be compared with any other ordinary channels of communication.

B. KREISCHER & SONS, FIRE BRICK.

BEST AND CHEAPEST.
Established 1845.
Office, foot of Houston Street, East River,
NEW YORK.

NEWTON & CO.,

ALBANY, N. Y., Manufacturers of

FIRE BRICK

Stove Linings,

Range and Heater Linings

Cylinder Brick, &c., &c.

M. D. Valentine & Bro

Manufacturers of

FIRE BRICK And Furnace Blocks DRAIN PIPE & LAND TILE.

Woodbridge, - - - N. J.

BORGNER & O'BRIEN,

Manufacturers

FIRE BRICK

Edge Pressed Furnace Blocks,
CLAY RETORTS, TILES, &c.,
Twenty-third Street,
Above Race, PHILADELPHIA.
Twenty years' practical Experience.

PERTH AMBOY TERRA COTTA CO.,

Successors to

A. HALL & SONS, Perth Amboy, N. J.,
ARCHITECTURAL TERRA COTTA

FIRE BRICK.

170 Broadway, NEW YORK.

BROOKLYN

Clay Retort and Fire Brick Works,
(EDWARD D. WHITE & CO.)

Manufacturers of Clay Retorts, Fire Brick,
Gas House and other Tile.
VAN DYKE, EL ZABETH, RICHARDS & PARTITION STS.
Office, 88 Van Dyke St., Brooklyn, N. Y.

WATSON FIRE BRICK CO.,

ESTABLISHED 1846

Successors to JOHN R. WATSON, Perth Amboy, New Jersey.

Manufacturers of

FIRE BRICK,

For Rolling Mills, Blast Furnaces, Foundries,
Gas Works, Lime Kilns, Tanneries, Boiler
and Grate Setting, Glass Works, &c.
Fire Bricks, Fire Sand, and Kaolin for Sale.

HENRY MAURER,

Proprietor of the

Excelsior Fire Brick & Clay
Retort Works,
Manufacturer of FIRE BRICK, HOLLOW
BRICK AND CLAY RETORTS.

WORKS: PERTH AMBOY, NEW JERSEY.
Office & Depot, 418 to 422 East 23d St., N. Y.

TROY FIRE BRICK WORKS,

Troy, N. Y.,

JAMES OSTRANDER & SON,

ESTABLISHED 1846

Manufacturers of

FIRE BRICK,

Firebricks, Tiles, Blast Furnace Blocks, &c. Miners and
Dealers in Woodbridge Fire Clay and Sand, and Staten
Island Kaolin.

Established 1864.

GARDNER BROTHERS,

Manufacturers of

STANDARD SAVAGE FIRE BRICK,
TILE & FURNACE BLOCKS,

OF ALL SHAPES AND SIZES.

Clay Gas Retorts and Retort Settings, and
Miners and Shippers of Fire Clay.
Office: 116 Smithfield St., Pittsburgh, Pa.
Works: Mt. Savage Junction, Md., and Lockport, Pa.

HALL & SONS,

FIRE BRICK,

Buffalo, N. Y.

GEO. H. CREED,

SHIP CHANDLERY,

103 Reade Street, New York.

Manufacturers of and Wholesale Dealers in
Cotton and "Long Flax" Sail Duck,
Cotton and Linen Havens,
Creed's Patent Ships' Clews, Heltman's Wire Rope
Sockets, Agent for Raymond's American Crane Oil
for lubricating Cylinders and Valves.

WILLIAM H. ARNET,
Chairman.

Mellert Foundry & Machine Co.,

Limited.

(Works Established at Reading, Pa., in 1848.)
Manufacturers of

CAST-IRON WATER GAS PIPE

Specials: Flange Pipe, Retorts, Valves and Hydrants,
Lamp Pans, &c. The Improved Canadian Tur-
bine Water Wheel, Machinery and Castings
for Furnaces, Rolling Mills, Grist and Saw Mills, Min-
ing Pumps, Bolts, &c. Columns, Brackets, Iron
Fittings, &c.
AND SOLD MELLERT, Supl., Reading, Pa.

HENRY DISSTON & SONS' FILE CO., Limited,

Office. FRONT AND LAUREL STREETS,

PHILADELPHIA.

Factory, - - - - - TACONY, PA.

Having, in conjunction with another firm of File Manufacturers, secured the exclusive right of an
IMPROVED PROCESS FOR SHARPENING FILES,
we desire to call your attention to a few of its features.

All tools, excepting Files, are sharpened after having been hardened and tempered, and it has always been the desire of File Manufacturers to treat Files in the same manner, but until this new method was perfected it was impossible to insure that sharpness of the teeth so long desired.

New Mill Files sharpened by this process will not only do more work than an ordinary File, but will make finer and sharper cutting edges and file a harder saw. A trial of Files made under this improved process will fully demonstrate that they possess a degree of excellence never before attained. And this without extra cost to the purchaser.

Rasps and Files for brass and other metals are specially benefitted. All packages containing goods so treated will be labeled "Sharpened," and be marked with the date of manufacture.

It will be readily seen that the sharpening of File Teeth, after hardening, is a valuable improvement in their manufacture, producing a File far superior to any made under the old system.

To meet the increasing demand for our make of Files, we have enlarged our works, and have now a daily capacity of 850 dozen. Of these we consume weekly, in our own workshops, 350 dozen. We are thereby enabled to detect any deterioration in the quality which may occur from time to time. We desire to thank the trade generally for the generous reception given to our Files since their advent into the market, and trust that, by strict attention to the quality of our goods and wants of our customers, to merit a continuation of their orders.

HENRY DISSTON & SONS.

THE "WARNER" DOOR SPRINGS



are the most simple, most effective and most convenient ever introduced, and the immense sale we are having shows their great popularity and superiority.

There never was a Spring made that is so durable, so complete in its action, operating with a uniform pressure, holding the door tight when closed, and allowing it to open without increasing the pressure at any point.

When the door is opened about 130 degrees of a circle, it will press and hold it open.

The Spring is easily unhooked and rehooked—in an instant—from the door and also from the jamb, without removing a screw or pin.

This is a Convenience Possessed by no other Spring in the Market.

We are making this season three sizes, viz:

No. 1 For Screen or Light Storm Doors.

No. 2 For Medium Doors.

No. 3 For Heavy Doors.

They are for sale by most of the prominent jobbers of the United States and Canada.

Correspondence solicited.

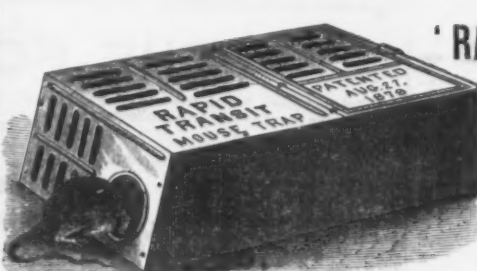
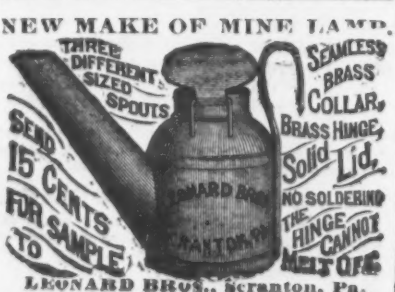
FREDERIC BARTLETT,
FREEPORT, ILLINOIS.

CHAMPION ONE-MAN SAW



WITH PATENT ADJUSTABLE ATTACHMENT. The only Saw that can be adjusted for either a One-Man or a Two-Man Saw. We make the following lengths, 3 1/2, 4, 4 1/2, 5 feet. Send for sample.

WHEELER, MADDEN & CLEMSON MFG. CO., Middletown, N. Y.



Patented August 27, 1878. Manufactured by
THE SMITH & EGGE MANUFACTURING CO., Bridgeport, Conn.

HUNDLEY & HANKS,
PROPRIETORS OF
NORTH CAROLINA HANDLE CO.



MANUFACTURERS OF
Handles and Spokes,
79 Reade Street and 97 Chambers Street, NEW YORK.
HARDWARE COMMISSION MERCHANTS.

John T. Lewis & Bros.
No. 231 South Front St.,
PHILADELPHIA.



Pure White Lead, Red Lead, Litharge,
Orange Mineral, Linseed Oil,
AND PAINTERS' COLORS.

Brooklyn White Lead Co.



White Lead, Red Lead & Litharge.
No. 152 Front Street,
NEW YORK.

JOHN JEWETT & SONS,
Manufacturers of the well-known brand of
WHITE LEAD.



ALSO MANUFACTURERS OF
LINSEED OIL.
152 Front Street, NEW YORK.



The Atlantic White Lead and Linseed Oil Co.,
MANUFACTURERS OF
White Lead (Atlantic), Red Lead,
Litharge & Linseed Oil.
ROBERT COLGATE & CO.,
287 Pearl Street, New York.



DUNBAR BROS.,
Manufacturers of
Clock Springs and Small Springs
of every description, from best Cast Steel
BRISTOL, CONN.

The Morris Sash Lock Mfg. Co.,
Manufacturers of

The Morris Sash Lock,
Pat. Combined Sash Lift & Lock,
Pat. Self-Locking Shutter Bar,
And specialties in Builders' Hardware.
214 and 216 ELM STREET, CINCINNATI, OHIO, U. S. A.

THOMAS MORTON,
Manufacturer of
CABLE, COPPER, IRON AND STEEL SASH CHAINS,
for suspending window shades. Also, Copper Cham-
pion Chains, with patent attachments, for same pur-
poses. Agents wanted in the principal cities in the
United States. Apply at
65 Elizabeth Street, New York.

PHILADELPHIA.

(Corrected Weekly by Lloyd, Silliman & Walton.)
 Terms, 30 days. For 60 or 90 days, interest added at 10 per cent. per annum.

APRILS.

Peter Wright, # B. 10040
 Over 250 lbs. 100 # B. 10040
 Eagle (American). 100 # B. 10040

APPLE PARERS.

Krystone Centennial, 1877. 100 # B. 10040
 Reading No. 72. 100 # B. 10040
 No. 73. 100 # B. 10040
 No. 74. 100 # B. 10040
 No. 75. 100 # B. 10040
 No. 76. 100 # B. 10040
 No. 77. 100 # B. 10040
 No. 78. 100 # B. 10040
 No. 79. 100 # B. 10040
 No. 80. 100 # B. 10040
 No. 81. 100 # B. 10040
 No. 82. 100 # B. 10040
 No. 83. 100 # B. 10040
 No. 84. 100 # B. 10040
 No. 85. 100 # B. 10040
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 No. 92. 100 # B. 10040
 No. 93. 100 # B. 10040
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 No. 95. 100 # B. 10040
 No. 96. 100 # B. 10040
 No. 97. 100 # B. 10040
 No. 98. 100 # B. 10040
 No. 99. 100 # B. 10040
 No. 100. 100 # B. 10040

ROTARY PUNCH PARS.

Lots of 10 to 25 dozen special prices.

AXES.

Hunt's Kentucky and Yankee. per doz \$10.00
 Hunt's Red Warrior. 11.00
 Richard Chief. 12.00
 Beveled Axes. 13.00
 Double Bit Axes. 14.00

ANGERS AND ANGER BITS.—New List January 1.

Baker's Nut Angers. 15.00
 Cook's Angers. 16.00
 Watson's Ship Angers. 17.00
 Benjamin Pierce Angers. 18.00
 Griswold Angers. 19.00
 Cook's Angers. 20.00
 Jennings' Angers. 21.00
 Bonney's Pat. Hol. Angers. 22.00
 Stearns' Pat. Hol. Angers. 23.00

BALANCES.

Light and Common. 24.00
 Heavy. 25.00

BELLS.

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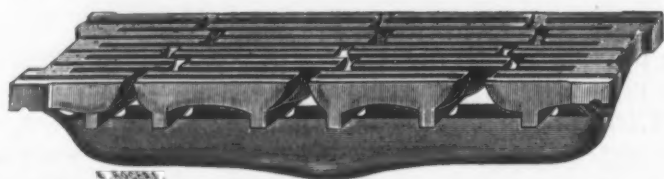
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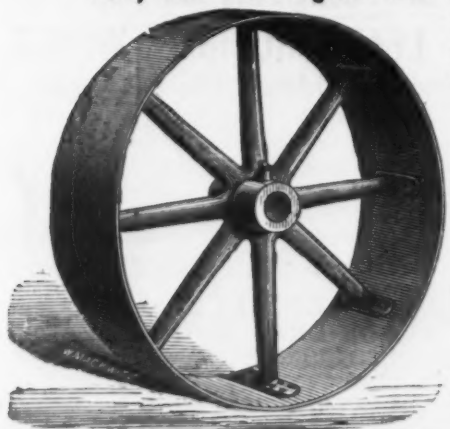
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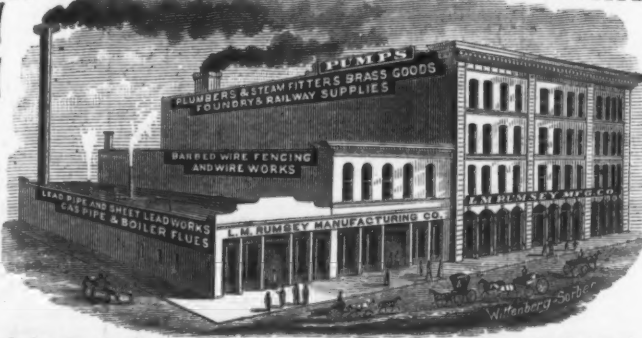
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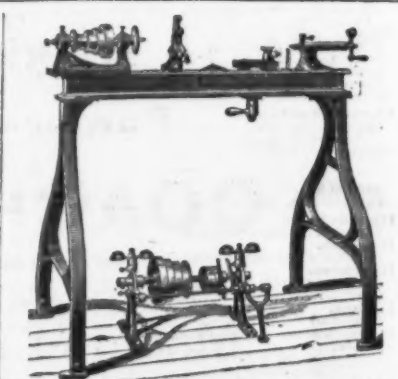
Rings, 75c. Rings, 50c. 100. Holders, 75c. Huskers, 10c.

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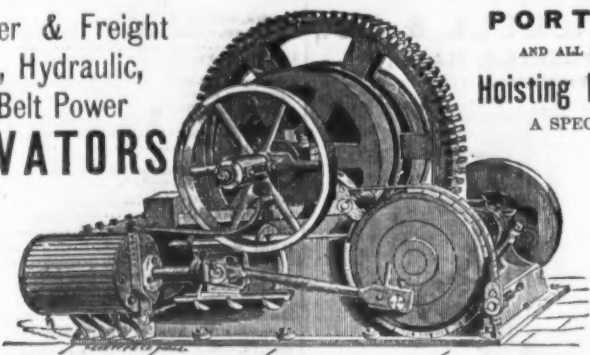
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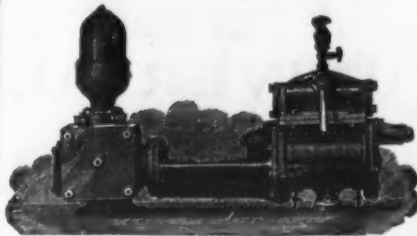


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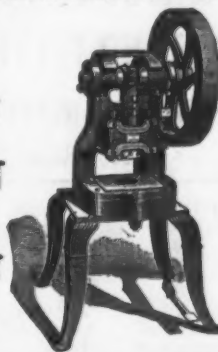
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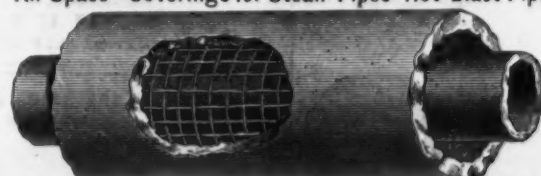
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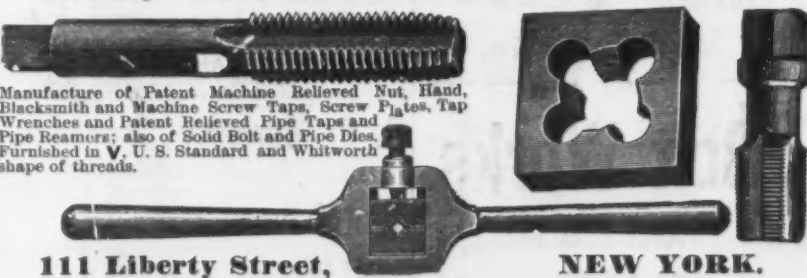
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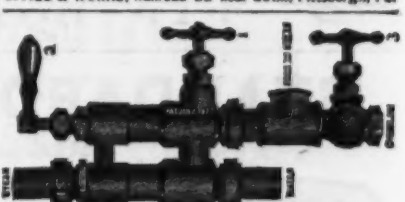
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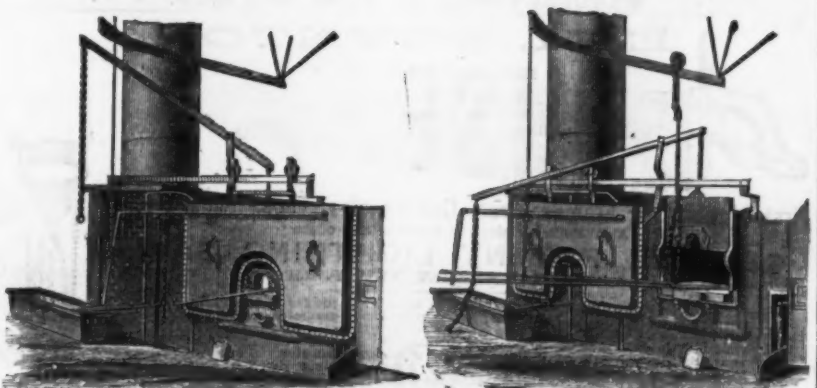
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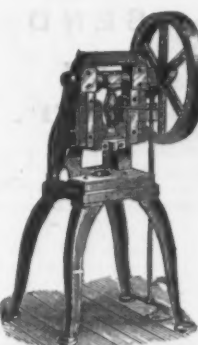


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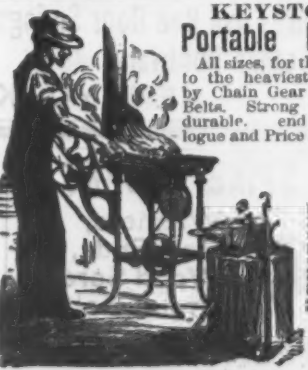
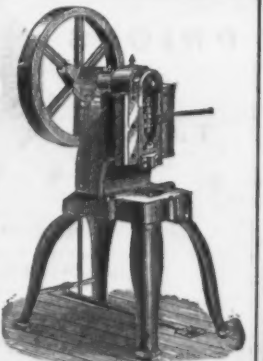
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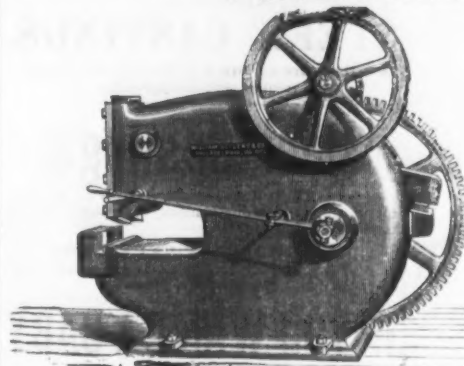
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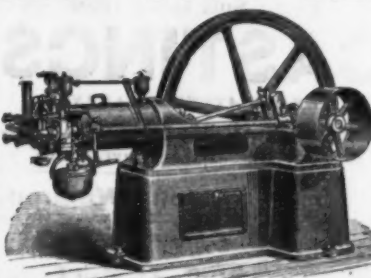
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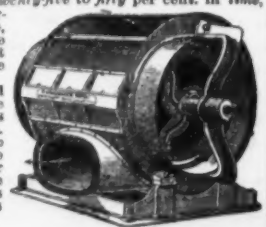
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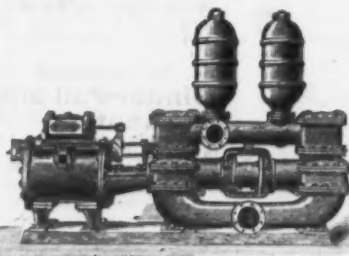
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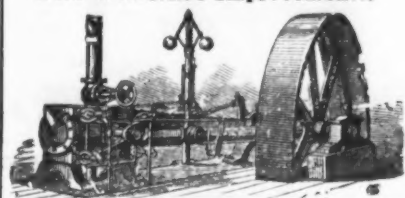
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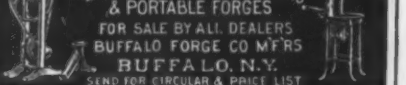
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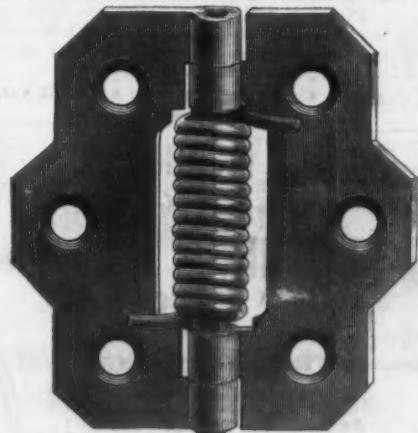
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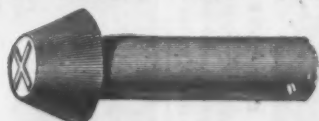
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